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9 AUG. 1933
INSTITUTE

ADVISORY DEPARTMENT

OF

THE IMPERIAL COLLEGE OF

TROPICAL AGRICULTURE.

REPORT

ON THE

AGRICULTURAL DEPARTMENT, ST. VINCENT,

FOR THE YEAR

1932.

TRINIDAD.

ISSUED BY THE COMMISSIONER OF AGRICULTURE FOR THE WEST INDIES.

1933.

[Price Sixpence.]

REPORTS

ON THE

BOTANIC STATION, ECONOMIC PLOTS, AND AGRICULTURAL EDUCATION, ST. VINCENT.

Annual Reports on certain Economic Experiments conducted in connection with the Botanic Station, 1900-2.

Annual Reports on the Botanic Station for the years 1901 and 1902.

Annual Reports on the Botanic Station, Economic Experiments, and Agricultural Education for the years 1902-3 to 1918-32.

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PRINTED BY THE GOVERNMENT PRINTER, AT THE GOVERNMENT PRINTING OFFICE,

KINGSTOWN, ST. VINCENT.

1933.

LETTER OF TRANSMITTAL.

THE IMPERIAL COLLEGE OF TROPICAL AGRICULTURE,
AGRICULTURAL ADVISORY DEPARTMENT,
TRINIDAD,

Ref. No. C.A. 743. 30th May, 1933.

Sir,—I have the honour to transmit the Report on the St. Vincent Agricultural Department for the year ended December 31st, 1932.

2. Sea Island Cotton which for many years produced one of the major crops of the Island has fallen to the status of a minor industry and in 1932 production was only 74,000 lb. of lint. In spite of this, the greatest care and attention is necessary to maintain quality so that in the event of a revival of demand the Colony will be in a position to resume the production of a first class product. The Island is indeed fortunate in having located at its Experiment Station a Research Officer carrying on the work of improvement on behalf of the Empire Cotton Growing Corporation with little expense to the Colony. The action of the Corporation is much appreciated by those interested in the Sea Island Cotton industry.

3. Fortunately, the Arrowroot industry has maintained its position and shows a steady increased production. The demand from the United States continues to increase but that from the United Kingdom is only just being maintained. The marketing of the product is now fairly established and is in the hands of an association of growers.

4. Mr. Jackson in this Report indicates that the arrowroot growers are showing a great deal of interest in the agricultural aspect of arrowroot growing as well as in the marketing of the product. With the appointment of a well trained officer to devote his time to the requirements of this crop progress may be expected. Such questions as the manuring of the crop, the elimination of inferior types of arrowroot and the study of diseases and pests will receive renewed attention.

5. The coconut groves on the Island continue to be comparatively healthy and free from diseases and pests. The few cases of "Red Ring" which have appeared have been dealt with by the estate owners when recognised. The agricultural officers need to be constantly on the look-out for fresh outbreaks. The exports of copra during the year reached a record figure and are assuming important dimensions.

6 Progress in the development of a fruit and vegetable industry with Canada has been disappointing due to unremunerative prices in Canada. Much experience has been gained locally in the production of these crops and the marketing methods have been carefully worked out in collaboration with Mr. A. C. Shill, the Marketing Officer. With a revival of prices in Canada the Island should be in a position to participate successfully in supplying the demand. A detailed account of the working of the Marketing Depôt is given in the Report.

7. During the year an estate was purchased by Government for land settlement purposes. Land settlement schemes have in the past been successfully handled in St. Vincent and a further opportunity of settling peasants in this way is appreciated by the people.

8. Little has been done by Government to assist in the re-establishment of Agricultural Credit Societies. The Assistant Agricultural officer in his report indicates that the movement is being held up for want of capital. Some financial assistance is urgently required if the Societies are to continue to serve a useful purpose.

9. The Report indicates the efforts that are being made to develop agricultural education and the establishment of the Glen Community School is an interesting experiment in this direction.

I have the honour to be,
Sir,
Your obedient servant,

H. A. BALLOU,
Commissioner of Agriculture,
Imperial College of Tropical Agriculture.

His Honour
THE ADMINISTRATOR,
St. Vincent, B.W.I.

CONTENTS.

	Page.
SECTION I.	
Work in Botanic Gardens and Observations on Plants ...	1
Plant Importations	2
Work in Nurseries and Distribution of Plants	2
Inspection and Fumigation of Imported Plants and Seeds ...	3
Miscellaneous Experiments	3
Manurial Experiments—Arrowroot, Tomatoes, Yams, Sweet Potatoes, Lettuce, Benna, Broom Corn.	
Work connected with Insect and Fungus Pests and their control	9
Progress in Chief Industries	14
Foreword, Cotton (West Indian Cotton Conference) Cacao, Starch, Syrup, Coco-nuts.	
Progress in Minor Industries	22
Maize, Ground-nuts, Peas and Beans, Miscellaneous, Rum.	
Manila Hemp	23
Plant and Animal Legislation	24
Agricultural Instruction, Education and Co-operation ...	25
Results of Pupil Teachers' Examination, Grammar School Garden Syllabus, The Glen Community School, Science Teaching.	
Details of Staff and Administration	27
Expenditure, Receipts.	
Correspondence	27
Meteorological Observations	27
Official Visitors	29
Veterinary Report	29
SECTION II.	
Report of the Cotton Experiment Station	31
SECTION III.	
Agricultural Credit Societies	33
SECTION IV.	
Government Fruit and Vegetable Bureau	34
SECTION V.	
Government Cotton Ginnery	38

Staff of the Agricultural Department, St. Vincent.

Agricultural Superintendent	T. P. Jackson.
Agricultural Assistant, Manager, Government Fruit and Vegetable Bureau and Inspector, Agricultural Credit Societies	P. Morrison.
Cotton Inspector and Government Vaccinating Officer ...	L. Brown.
Foreman, Botanic and Experiment Stations ...	R. Vanloo.
Officer in Training (To May 6th)	K. P. A. Pencheon.
„ „ „ (From October 1st) ...	F. A. DaCosta.
Clerical Assistant	Miss D. E. Wall.
Laboratory Assistant to Cotton Research Officer ...	Miss N. Grant.

COTTON RESEARCH.

Provided by the Empire Cotton Growing Corporation.

Cotton Research Officer ...	S. H. Evelyn, d.i.c.t.a.

REPORT ON THE AGRICULTURAL DEPARTMENT, ST. VINCENT,

FOR THE YEAR ENDED DECEMBER 31st, 1932.

Section I of this Report was written by the Agricultural Superintendent, Section II by the Cotton Research Officer, Sections III and IV by the Agricultural Assistant and Section V by the Acting Manager, Government Cotton Ginnery.

SECTION I.

Work in the Botanic Gardens and Observations on Plants.

The rainfall measured at the Botanic Gardens for the year was 94·52 inches. As the average for the past 39 years works out at 102·99 inches it may be regarded as normal.

During the year the Gardens were kept in good condition, and were admired by tourists and other visitors.

Calycophyllum (Warszewiczia) *coccinea* DC., which was imported in 1924, and commented on in the Report on the Agricultural Department for that year has made indifferent growth since its importation. This is to be regretted as it is very handsome when in bloom.

Juniperus pachyphlœa which was introduced in 1906-7 did not thrive for the first few years. There are two specimens of this growing in the Gardens, and they are now healthy trees of some fifteen feet in height ; their handsome bluish grey foliage is of a distinctly striking nature.

Several plants of *Hydnocarpus anthelmintica* are growing in the Gardens. The seeds from which these plants were raised were received from India in 1930 through the Honourable the Chief Medical and Health Officer. Seeds of *Hydnocarpus Wightiana* were imported in 1926 and from these six plants were established. These flowered and fruited during the year, the seeds, however, were not fertile. Seeds of *Hydnocarpus alpinus* were received from the Commissioner of Agriculture in 1924. Of this consignment only one plant grew ; it was planted in the Gardens and is now some nine or ten feet high. The plant suffers during protracted dry weather and if not artificially watered the top growth commences to wither. The seeds of each of these three plants produce Chaulmoogra oil, used in the treatment of leprosy. Seeds of *Hydnocarpus anthelmintica* and *H. Wightiana* were analysed in 1932 by Officers of the Department of Agriculture, Straits Settlements and Federated Malay States, and published in pamphlet form, Scientific Series No. 9, 1932. The following extracts which are interesting are taken from the "Remarks and Conclusions" on this work :—"The results of the examination of the seeds show that the oil content of the seed from *H. Wightiana* is approximately double that from *H. anthelmintica*".

"As a source of pure hydnocarpic acid, the oil from *H. Wightiana* would be preferable, since the contaminating esters—that is those other than hydnocarpic and chaulmoogric—are found associated with the latter ester, leaving the hydnocarpic ester in a relatively high state of purity. The reverse is the case with the oil from *H. anthelmintica*, the hydnocarpic ester being contaminated with an ester of another fatty acid probably palmitic ester".

"Provided, therefore, that equally satisfactory results are obtained in the cultivation of the trees, it appears that *Hydnocarpus Wightiana* would be preferable to plant, both from the point of view of yield of oil and its constituents".

Plant Importations.

The following collection of seeds of plants useful for green dressing purposes were received from the Assistant Commissioner of Agriculture :— *Phaseolus mungo* (Woolly Pyrol), *P. radiatus*, *Canavalia gladiata*, *C. plagiosperma*, *C. ensiformis*, *Cassia Tora*, *Tephrosia purpurea*, *T. candida*, *Crotalaria striata*, *C. juncea*, *C. sericea*, *C. usaramoensis*, *Centrosema plumerii*, *Indigofera hirsuta*, *Desmodium gyroides*, *Calapogonium muconoides*, *Stizolobium atterrimum* and one package received under the name of " Og mung ".

Seeds of the variety of Cauliflower, *Brassica oleracea* known as " Maincrop Benares ", were received from the Agricultural Department, St. Kitts. This has the reputation of forming heads in the Tropics.

All the above will be tried out in the near future.

Work in Nurseries and Distribution of Plants.

The following is a list of plants, cuttings, etc., distributed from the nurseries at the Experiment Station :—

Economic and Decorative Plants.

Tomato	...	...	40,400
Onion	...	...	6,300
Cabbage	...	...	6,200
Miscellaneous Decorative		...	1,387
Manila Hemp	...	...	810
Grafted Lime	...	...	347
Grafted Mango	...	...	245
Miscellaneous Economic		...	142
Budded Grape Fruit		...	102
Pine-apple	...	...	75
Budded Orange	...	...	32
			56,040

Cuttings.

Sugar Cane	...	...	16,500
Sweet Potato	...	...	1,500
Aralia	...	...	3,000
			21,000

Miscellaneous.

Arrowroot rhizomes	...	...	6,038 lb.
Miscellaneous tubers	...	...	159 ,,
Yams	...	...	154 ,,
			6,351 lb.

Although large numbers of tomato plants were sent out from the nurseries, the number falls short of those for the previous year by some 15,000 plants. The onion and cabbage plants were raised and sold to persons who grew them for local consumption. Apart from the vegetables exported of which a record is kept by the Customs, no record is kept of a considerable trade which is done in such market produce as lettuce, tomatoes, beans, cabbage, etc., with the boats of the Canadian National Steamships. This produce is purchased in St. Vincent for the use of the passengers and crew of these boats.

During 1932 the demand for grafted mango plants was not so good as in the previous year. The cause for this is not far to seek. Officers of the Agricultural Department have for the past few years been converting common mango trees into Julies by topworking them. The owners of these trees are interested in the work and each tree that is done is in affect a lesson in grafting. This work has been done principally on peasant holdings and was carried out free of cost. So far it has been confined to young trees and after the insertion of the bud it is only necessary to cut off undesired growth. One estate owner has grown, in situ, a few acres of common mango plants which have recently been successfully budded by a labourer who had been taught. Inarched mango plants are sold from the nurseries at 1/- each, but if a person can get something equally as good for nothing, there is no reason to suppose that he will pay for it.

There were some 500 grafted or budded Citrus plants distributed during the year. The demand for these is not great; at the time of writing there are a number of these in the nurseries which were not sold during 1932, although the fact of their existence was advertised in all the local newspapers.

There were 810 Manila Hemp (*Musa Textilis*) plants distributed. The majority of these were planted in the Leeward part of the Island.

Inspection and Fumigation of Imported Plants and Seeds.

The following gives a list of the plants, etc., which were fumigated or examined under the Importation of Plant Diseases Prevention Ordinance, 1906 :—

Vegetable and other Seeds	...	77 parcels
Ornamental and other Plants	...	34 „

A consignment of plants received from Italy, was regarded as possible conveyers of plant diseases and was destroyed.

Miscellaneous Experiments.

MANURIAL EXPERIMENT.

Arrowroot.

A manurial experiment on similar lines to that carried out with arrowroot in 1931 was conducted during the year under Report. The exceptions were that two new series were added, i.e., disintegrated stained cotton seed meal and cotton seed meal and ashes. In addition the quantity of cotton seed meal per acre in the plots receiving potash and phosphates and that receiving cotton seed meal alone was increased from at the rate of 600 lb. per acre to 1,000 lb. and the application of pen manure was increased from 10 to 20 tons. Stained cotton seed meal is the local name for cotton seed meal obtained from stained seed cotton which has been put through a disintegrator and not through an oil expeller. It has always been regarded by planters as not forming a manure as valuable as that from which the oil has been expelled. Cotton seed meal and ashes are often used by St. Vincent planters, the former being rich in nitrogen and the latter in potash. The ashes used were obtained from a local bakery and were the residue from burnt hard wood.

There were three series, twelve plots being in each, and the plots were planted on March 14th—18th, 1932, and reaped on February 24th—March 8th, 1933. A severe attack of arrowroot worms, Calpodes, was experienced on all the plots during June and July; they were controlled by dusting with Paris Green. The results of the experiment are given in the following table, the weight of rhizomes from the plots, which were $\frac{1}{150}$ acre in area, are presented calculated to weight per acre with the averages, with, in addition, the average increase or decrease percentage over the control or no manure plots.

This experiment was taken a step further during 1932–33 than previously. Three ten pound samples of rhizomes were taken from each plot, and the starch content obtained. The rhizomes were pulverised in a mortar, washed and strained through mesh wire of 60, 80 and 100 mesh per inch, the arrowroot was subsequently dried on wire, and each sample carefully weighed. It was found that the scale leaves on the rhizomes were approximately 3 per cent. of the weight, and this was deducted when calculations were made.

This work was done to find if the manures had any effect on the starch content of the rhizomes. These results are also embodied in the table below. They give the average weight and percentage of starch extracted from the samples. From these figures the yield of starch in pounds and barrels are calculated. The weight of a barrel of arrowroot is 224 lb.

ARROWROOT MANURIAL EXPERIMENTS.

Plots.	Manurial Treatment.	Yield of Rhizomes per acre., lb.			Average Yield.	Percentage Increase or Decrease over Control.	Average weight and Percentage starch extracted from (3) 10 lb. samples of rhizomes.		Yield of Starch per acre.	
							oz.	%	lb.	Barrels.
1	Gliricidia Prunings 5 tons per acre (Mulched) ...	34,844	40,166	30,628	35,212	+ 61	26⅚	16·7	5,728	26
2	Pen Manure, 20 tons per acre ...	29,760	36,580	29,440	31,926	+ 46	26⅔	16·6	5,161	23
3	Stained Cotton Seed, 1,000 lb. per acre (Disintegrated) ...	30,626	29,140	26,566	28,777	+ 31	26⅚	16·7	4,681	21
4	Cotton Seed Meal, 1,000 lb., Potash 30 lb. Phosphates 40 lb. per acre ...	28,841	27,633	24,915	27,129	+ 24	27⅓	17	4,495	20
5	Nitrogen 30 lb., Phosphates 40 lb., Potash 30 lb. per acre ...	32,163	23,707	22,499	26,123	+ 19	27⅙	17·3	4,406	19½
6	Cotton Seed Meal 1,000 lb. per acre ...	28,388	24,462	23,707	25,519	+ 16	22⅚	14·2	3,524	15¾
7	Phosphates 40 lb. per acre ...	25,821	25,519	24,764	25,368	+ 16	26⅓	16·4	4,050	18
8	Phosphates 40 lb., Potash 30 lb. per acre ...	27,900	23,808	22,348	24,685	+ 13	26⅔	16·6	3,991	17¾
9	Potash 30 lb. per acre ...	29,294	20,234	19,447	22,991	+ 5	26⅙	16·3	3,647	16
10	Cotton Seed Meal 1,000 lb. and Ashes 500 lb. per acre ...	25,792	23,560	18,724	22,692	+ 3·8	26	16·25	3,577	16
11	Control ...	21,593	22,801	21,140	21,844	—	24⅙	15	3,200	14
12	Nitrogen 30 lb. as Sulphate of Ammonia ...	23,556	21,291	19,630	21,492	— 1·6	25⅔	15·6	3,344	15

The mulch of *Gliricidia maculaia* (Madura) was weighed for the experiment under review and the calculated weight of air dried mulch applied per acre was at the rate of 5 tons. The return obtained from these plots worked out at 35,212 lb. of rhizomes per acre, or in terms of starch 5,728 lb. or 26 barrels. A most excellent return, and one that is 61 per cent. over that of the control plot. In 1931 increases of 45 per cent. were obtained, and when Dr. Harland conducted experiments with the same material increased returns of 34 per cent. were recorded. These figures clearly point out that the arrowroot plant responds in a remarkable way to such treatment, whether this is due to the purely manurial value of the dressing or to a combined manurial and mechanical action one cannot say. It is clearly evident that it would pay arrowroot growers to follow the example of the Experiment Station and enclose their fields with Gliricidia hedges. In addition to their value as producers of mulch for crops, they would form good wind breaks, and provide harbours for Jack Spaniards and other insect predators and parasites.

Applications of pen manure at the rate of 20 tons per acre gave increases over the no manure plots of some 46 per cent. In 1931 when pen manure was applied at the rate of 10 tons per acre the percentage increase was 23. Stained cotton seed meal trials are new and the plots gave increases of 30 odd per cent. over the controls, this is interesting as the plots which received cotton seed meal gave approximately half of this i.e., 16 per cent. Cotton seed meal is much more popular as a manure with local planters than stained cotton seed meal.

Cotton seed meal, potash and phosphates gave increases of 24 per cent. In the trials of 1931 increases from this series were at the rate of only 7 per cent. During the experiments under report the quantity of cotton seed meal applied per acre was increased from 600—1,000 lb., potash and phosphates remain the same.

From the above table it will be seen that applications of nitrogen, potash and phosphates resulted in an increase of 19 per cent. and cotton seed meal alone one of 16 per cent. In the 1931 experiments applications of cotton seed meal resulted in the same figures being obtained although then the manure was applied at the rate of 600 lb. per acre and for the series under discussion the amount was increased by 400 lb.

Phosphates at the rate of 40 lb. per acre, in the form of basic slag resulted in 16 per cent. increase, whilst in the previous trials with this manure no appreciable increase resulted from its application.

A combination of phosphate and potash resulted in a 13 per cent. increase, in 1931 the response made by the plants to this manure was less, being 6 per cent. When potash alone was used there was a five per cent. increase whilst in the results of the experiment conducted in the year previous increases of 16 per cent. were obtained.

Plots 10 received cotton seed meal and ashes and resulted in only a small increase, and nitrogen as sulphate of ammonia had a slightly depressing effect.

The plots which produced rhizomes with the highest starch content, i.e., 17·3 per cent were those which received a complete manure of nitrogen, phosphates and potash and the lowest were those which received cotton seed meal being only 14·2 per cent., or 3·1 per cent. less than the highest, and practically on a par with those from the no nanure plots. With this exception all the plots produced rhizomes with a higher starch content than those yielded by the no manure plots.

The distances at which the rhizomes in this series were planted were 16 inches x 12 inches.

This experiment indicates that not only can increased returns from arrowroot be obtained by the application of organic and certain artificial manures, but land which is so manured produces rhizomes with a higher starch content than those which are not.

The writer wishes to record his appreciation of the interest which Mr. L. Brown, Cotton Inspector, took in these arrowroot experiments. The

work of extracting the starch from the rhizomes was done under his supervision as was also the application of the manures.

Tomatoes. Varietal and Distance Planting.

These experiments were laid out towards the end of 1931. The varieties used were Marglobe, Livingstone Globe, John Baer and Bonny Best. The experiment was laid out according to the plan published in Tropical Agriculture Volume 8, No. 9. Planting spaces were 4 ft. x 3 ft., 4 ft. x 2 ft. and 3 ft. x 2 ft. and consisted of five blocks of twelve plots each. Each plot was $\frac{1}{80}$ acre in area. Farm yard manure at the rate of 10 tons per acre was applied to the land. Great difficulty was experienced in obtaining a good stand due to repeated attacks of mole crickets. In addition, many plants were lost on account of fungoid diseases, the chief of which was Wilt. For this reason it is not proposed to give the results in detail but the following figures were obtained from the 15 plots of each variety. Marglobe gave a calculated yield of 8,224 lb. per acre, Bonny Best 8,044 lb., John Baer 6,460 lb. and Livingstone Globe 5,648 lb.

Counts were taken of the number of plants attacked by Wilt in order to form some idea of the susceptibility or otherwise of the varieties. The percentages were Marglobe 29 per cent, Livingstone Globe 28 per cent. John Baer 23 per cent and Bonny Best 20.

When harvesting took place all the diseased fruits were weighed separately and figures taken as to the quantity attacked by Blossom End Rot and Bubbly Fruit Rot. For the former the figures were John Baer 17 per cent, Bonny Best 17 per cent, Marglobe 17 per cent and Livingstone Globe 14 per cent. There was little or no variation in these figures. The figures for Bubbly Fruit Rot are John Baer 9 per cent, Marglobe 8 per cent, Bonny Best 7 per cent and Livingstone Globe 5 per cent.

The keeping of a record of the number of plants which were destroyed by mole crickets was commenced but this was abandoned, some places were supplied as many as five times. When the experiment was started the idea of protecting young plants with leaves from the Mammee Apple tree had not materialised; this is discussed elsewhere.

Yams.

Nine varieties of yams were planted for this trial. The plots were $\frac{1}{540}$ acre in area and were repeated three times. One half of the plots of each variety was staked and the other half was not. Plots were planted on May 19th and were reaped on December 22nd—24th. All the staked varieties with the exception of three gave appreciably increased returns over those that were unstaked and this indicates that it would pay to stake yams whem inexpensive stakes can be procured. Good returns were obtained from all the varieties and this is specially the case with Oriental and Danish. The returns as calculated to pounds per acre are given below.

Variety.	Calculated yield per acre. Staked.	Mean.	Calculated yield per acre. Unstaked.	Mean.	Increase or decrease over Unstaked.	Percentage increase or decrease.
Danish ...	25,581		15,246			
	25,591		17,424			
	32,670	27,947	25,591	19,420	+ 8,527	+ 30·5
Light Red ...	22,234		5,445			
	14,701		7,078			
	9,256	15,397	8,167	6,896	+ 8,501	+ 55·12
Bottle Neck Lisbon ...	27,225		8,167			
	21,241		15,246			
	11,979	20,148	13,612	12,341	+ 7,807	+ 28·0
Crop ...	27,769		11,978			
	22,324		20,146			
	22,869	24,321	19,057	17,060	+ 7,261	+ 29·8
Seal Top ...	25,581		17,424			
	4,900		8,702			
	29,958	20,146	15,790	13,975	+ 6,170	+ 30·6
Oriental ...	47,916		47,371			
	31,038		44,104			
	10,345	18,149	21,235	18,512	— 363	— 1·1
Lisbon ...	20,691		14,701			
	21,780		17,424			
	20,691	21,054	18,513	16,879	+ 4,175	+ 19·8
Horn ...	28,314		14,157			
	15,790		20,146			
	10,345	18,149	21,235	18,512	— 363	— 1·1
Bugle Horn ...	19,057		13,612			
	15,246		15,246			
	9,256	14,519	19,602	16,153	— 1,634	— 10·1

Vegetables for Canadian Market.

Sweet Potatoes.

Three varieties of sweet potatoes were planted during the year with the view of obtaining information as to whether any of them would be suitable for the Canadian market. The varieties were V. 52, Stranger and New Jersey. When reaped the returns calculated to pounds per acre were V. 52, 19,190 lb., Stranger 16,660 lb., and New Jersey, 4,860 lb.

Twenty bushel crates were shipped to Canada in December last. The Agents stated that the potatoes did not suit the trade and they did not resemble those received from the United States that the Canadians were used to. Some of the lot shipped were sent round to jobbers on consignment and others distributed as samples. The potatoes were too large and it was said would never bring a satisfactory price. Only three crates were sold and the price obtained was 6/3. Most of the consignment consisted of potatoes from the variety V. 52. This is a popular potato in St. Vincent which possesses a flavour appreciated locally.

Lettuce, etc.

Lettuce seeds were imported with two objects in view, firstly to test which variety would stand up to local conditions, and secondly to see whether they could be sent successfully to Northern Markets. Lettuce varieties which possess good reputations are often disappointing when grown in the tropics, at times they fail to develop a delicate flavour and in many instances are decidedly bitter.

Six varieties were tried, four were cabbage or heading lettuce and two were Cos or Romaine varieties.

Early Butternut. This variety was the best of all tried. The colour of the main part of the outside leaves was a light yellowish green, with light bases, and the heart was almost white. There was no suggestion of a bitter flavour even when the plants commenced to form flowers, and the crispness of the leaves even at this stage was retained. This variety can be recommended both for general appearance and flavour.

Delicacy formed heads not quite so large as the Big Boston variety. When young the inside leaves are of good flavour and crisp but when old the leaves of the plants darken in colour.

Mignonette is a variety which is planted somewhat extensively in the West Indies, and although one that always forms heads its general appearance is not as good as the previously mentioned ones. The heart leaves are crisp, but the majority develop a somewhat bitter flavour just before flowering.

Big Boston is very similar in appearance and flavour to Mignonette, but the heads are larger. In fact this variety produces larger heads than any.

Of the two Cos varieties tried Crispy Cos was the better of the two. It has a lighter green foliage than Trianon Cos. The leaves of Crispy Cos are larger than those of Trianon Cos, which are spoon shaped and develop quite early a slightly bitter taste.

A small consignment of lettuce was sent to Canada but reports of these have not been received at the time of writing.

In addition to the above small lots of parsley, beet root and carrots were sent. Swede turnips were also grown for the same purpose but the turnips were not of a good shape and were not shipped.

Benna (*Sesamum indicum*).

Benna is found commonly in peasant plots throughout the island. It is not grown as a pure crop, and only few and scattered plants are seen. It is used in the making of sugar cakes, preparation of soups and for other culinary uses. Sesamum or Benna is more commonly known as the source of Gingelly oil which is used for adulterating Olive oil and for other purposes. The plant grows well in St. Vincent and it was thought that it could be profitably cultivated. It has been grown before at the St. Vincent Experiment Station, but no record was kept of the return obtained. In Antigua trials have been made in the past and calculated returns of some 200 lb. per acre were obtained. In St. Kitts returns of 300 lb. were recorded, and in India 450 lb. per acre is regarded as a good average. The crop takes some four months to mature. On February 5th seeds were sown at the Experiment Station on 4 ft. banks 20 inches apart. After germination the plants were thinned out to two per hole. The area of the plot was $\frac{1}{7}$ acre and the quantity of seed reaped from this was 30 lb. *i.e.*, at the rate of 210 lb. per acre.

Broom Corn.

A $\frac{1}{10}$ acre of broom corn was planted on August 8th and reaped on November 16th. This yielded 240 lb. of broom corn or at the rate of 2,400 lb per acre. Most of this corn is used at the Experiment Station for making brooms which are sold at the Government Fruit and Vegetable Bureau, part of it was converted into brooms during broom making lessons which were given to the pupils of the Glen Community School.

Work connected with Insect and Fungus Pests and their control.

The Cotton Worm (*Alabama argillacea.*) Hubn.

Cotton caterpillars did not make their appearance in 1932, but early in 1933 the cotton in some fields on the Leeward Coast was attacked and also that growing in the island of Mustique. In the former case arsenate of lead

was used as a means of control, and in the latter Paris green. The action of arsenate of lead on caterpillars was slower than that of the other insecticide, but it effectively controlled the pest. No serious damage to the crop resulted from the instances cited.

The Pink Bollworm (*Platyedra gossypiella*).

Pink bollworm was noticed at the Experiment Station on January 31st, this was 153 days after cotton was planted. For the previous three years the time was 148 days, 146 days and 129 days. This pest was not responsible for serious damage during 1932, the measures adopted for its control have proved quite successful. To illustrate this it might be said that counts of the number of larvæ found in the seed cotton were made at the Experiment Station during the months of January and February, the numbers during these months were 21 and 186 respectively. These two months were the peak of harvesting, and the area reaped was approximately two acres.

The Cotton Stainer (*Dysdercus delauneyi*).

The work carried out during the past year for the control of cotton stainers was on similar lines to that of previous seasons.

The Close Season for 1932 was from May 1st to August 31st. During the early part of this period Agricultural Officers visited all estates and peasant holdings on which cotton had been grown. At the time of these visits it was found that all cotton plants had been pulled up before the beginning of May, in some instances, however, they had not been burnt. Immediate action was taken to do so as soon as the irregularity was pointed out.

The following table gives the numbers of stainers accounted for at the Experiment Station for the past ten years:—

Months.	1923.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.
January ...	37,878	20,086	1,449	2,850	—	29,298	120	63	114	2,636
February ...	63,800	2,800	7,723	—	105	7,217	7,668	91	303	10,083
March ...	51,880	930	6,231	791	1,072	909	7,460	405	18,643	16,733
April ...	3,002	1,225	2,400	5,136	334	42,648	—	13,560	7,215	5,668
May ...	817	52	716	100	3,660	—	273	4,430	—	—
June ...	908	—	—	—	3,060	101	163	—	—	—
July ...	550	—	—	—	—	2	20	673	—	—
August ...	87	—	1	—	—	705	1,597	179	—	—
September ...	3	—	1	—	—	973	1	—	—	—
October ...	8	—	—	—	—	758	—	—	40	—
November ...	—	—	—	—	—	538	—	—	18	9,826
December ...	377	57	550	—	150	—	1	—	—	7,858

From the preceding it will be seen that stainers were at no time present at the Experiment Station in large numbers during the year 1932. During the month of July a few were found on a hedge of Hibiscus. They were controlled by means of traps. In this instance counts were not taken.

Seventeen Silk Cotton trees (*Eriodendron anfractuosum*) were destroyed during the year; of these six were moderately large specimens.

Red Ring of Coco-Nuts.

A few coco-nut trees were attacked by this nematode worm (*Aphelenchus cocophilus*) during the year, but so far the trees affected have not been numerous and the disease cannot be regarded as making headway in St. Vincent. The symptoms of this have been put forward in previous Reports, but a useful purpose may be served if the remarks on control measures which appeared in the 1929 Report be reiterated. "There is only one method of control and that

is complete destruction of the infected trees, and these should be dealt with as soon as possible. It is necessary not merely to cut the tree across at the base but to dig around it, cut the roots and turn it out. The whole should then be destroyed by the charcoal pit method. Infected trees should be isolated by means of trenches and these should be sufficiently deep to cut through all the roots passing across its situation. The earth from digging should be thrown inwards as a precaution against the scattering of possibly diseased material among the healthy trees.

The length of the adult of the nema which causes the trouble is $\frac{1}{25}$ inch in length, it can easily be detected under the low power of a microscope when diseased material is teased out in water.

Arrowroot.

Arrowroot Worm (*Calpodes ethlius*).

Several attacks of this pest were experienced during the year, and two developed to such an extent as to cause considerable injury to the foliage of the arrowroot crop. These took place in the months of June and July.

In August, 1931 and April, 1932, Mr. F. W. Urich, F.E.S., C.M.Z.S., Assistant Professor of Zoology and Entomology, Imperial College of Tropical Agriculture, visited St. Vincent in order to study this insect. Notes based on these visits were published in Tropical Agriculture, Vol. IX, No. 10. It is felt that these will be of great interest to readers and are therefore reproduced.

"The so-called 'arrowroot worm' is a pest of long standing, and the damage it is capable of doing to the arrowroot crop does not seem to have been assessed, beyond noting the defoliation of the plants. Past records show that defoliation varies from year to year according to the occurrence of natural parasites of the eggs of the butterflies and of those of the caterpillars, as well as to weather conditions. Usually caterpillars are numerous at the beginning of the season following cropping (January to March), when there is an abundance of young leaves. At that time, few parasites are to be observed. As the season advances, and as the rains increase, the caterpillars are controlled by natural enemies, in that, towards the end of a planting season, comparatively few caterpillars are to be seen, but many of the leaves show marks of old damage.

"On the occasion of the first visit in August, most of the fields bore signs of severe past damage, many plants having been stripped of all leaves, the remaining leaves being fully matured and hard. There were then comparatively few caterpillars, but much evidence of parasitism by natural enemies both of caterpillars and of eggs was observed. Rough field counts yielded the following results:—

"Thirty per cent of the caterpillars had been killed by undetermined Tachinid parasites; 25 per cent of the eggs had been destroyed by *Trichogramma minutum*; and 3 per cent of the caterpillars had been eliminated by a Eulophid parasite, Elachertus meridionalis. At the time of the August visit, egg parasites were predominant, but there were signs that the Tachinid parasites had been numerous.

"The second examination of the fields was carried out in April, 1932, in order to note conditions after cropping, when the leaves were young. There is no regular reaping season for arrowroot in St. Vincent, but plantations endeavour to reap before the rains set in before the months of October and March. Fields show young leaves a month after reaping. This is a very vulnerable stage of growth, and the leaves are much attacked by caterpillars. Fields are often severely defoliated several times before the caterpillars are attacked by natural enemies. Ovipositing butterflies seem to prefer young growth for their progeny,

and often concentrate on individual fields. The predominance of one of the early stages of the butterfly seems to depend on the stage of growth of the plants after cropping. A field which had been reaped in January showed a predominance of eggs in April. Many of the eggs showed exit holes of Trichogramma parasites, but a few young caterpillars were hatching in addition. In another district, a field which had been reaped five months previously, contained caterpillars of which the majority were fully grown and ready to pupate. An adjacent older field was less affected by caterpillars. In yet another district, a field of young growth was attacked and destroyed in patches. Here, eggs and recently hatched caterpillars were predominant. The incidence of Trichogramma was low in all these fields. Few Tachinid and few Eulophid parasites were observed during the April visit.

The Butterfly. The insect responsible for the caterpillar pest of arrowroot in St. Vincent is the well-known skipper butterfly, Calpodes ethlius, Cram. This insect has been known since 1872. It has a very wide range of distribution, which extends from the South-Eastern States of North America to Mexico, Central America, and through South America to Argentina. It also occurs throughout the West Indies. Besides this wide distribution, Calpodes is a powerful flyer, and occasionally migrates long distances. The food plant of the caterpillar is principally Canna in most countries, and arrowroot wherever it is grown.

"In most of the localities where Calpodes occurs, parasites of the eggs and caterpillars have been recorded, so that a choice of the most suitable species for purposes of natural control is indicated.

"*Life History Notes.* The development of the arrowroot butterfly occupies a period of roughly 22 days, distributed in various stages as follows:—

Egg stage	..	4 days
First stage caterpillar	..	2 do.
Second stage do.	..	2 do.
Third do. do.	..	2 do.
Fourth do. do.	..	6 do.
Pupa	..	6 do.
Total	..	22 days

"The period during which the adult female lives, and the number of eggs laid, have not yet been ascertained. Adding eight days and possibly longer for oviposition, it is highly probable that a new brood can be expected about once a month. Like many tropical insects, however, the broods overlap, and all four stages of the butterfly may be seen in a field, especially towards the end of the growing season. At the opening of a season when the plants are sprouting, the broods emerge more uniformly.

"*Habits of the Adults.* The butterflies are active during sunny days, when they visit flowers for purposes of feeding. In the early morning, they have been observed drinking water from dew or rain drops occuring on the leaves. Oviposition takes place principally in the later afternoon.

"*Habits of the Caterpillar.* As soon as a young caterpillar emerges from the egg, it consumes some of the egg shell, and then wanders to the margin of a leaf where it turns down and fastens by means of silken threads a small flap so as to form a shelter. As growth proceeds, new and larger shelters are formed by the caterpillar, pupation finally taking place in a securely fastened shelter, formed either of green or of withered leaf tissue. Owing to the difficulties of dusting or spraying with arsenicals for destroying caterpillars, biological control seems to be the most promising measure for eradicating the pest. If the parasites of St. Vincent are not able to exercise efficient control, then importations from Trinidad and other places might be tried".

Subsequently the St. Vincent Co-operative Arrowroot Association considered the matter of such importance that they have engaged the services of Mr. C. K. Robinson, D.I.C.T.A., for a period of two years, to study problems connected with the arrowroot industry, and especially problems connected with this insect and its control. He assumed duties in November last.

Burning Disease. *Rosellinia bunoides.* At the time of writing Mr. A. K. Briant, M.A., Mycologist, Imperial College of Tropical Agriculture, is investigating this disease, and the "cigar root of arrowroot". Attacks of Rosellinia have been recorded on numerous crops and plants, on permanent crops such as cacao and limes, on annuals such as yam, cassava and arrowroot, and on ornamental plants as Hibiscus and Acalypha. On arrowroot this pest is seldom found on well drained lands situated near the sea coast, it being found on holdings or estates situated in places of heavy rainfall; lack of drainage is often associated with this disease. W. Nowell in his book "Diseases of Crop Plants in the Lesser Antilles" states "The fungus cannot tolerate dry conditions and it is for the planter to take every advantage he can of this weakness".

This disease can easily be seen during the harvesting season, when the black discolouration of the rhizomes is conspicuous, it often occurs in patches, which persists from year to year.

Cigar disease results in an attenuated condition of the rhizomes. The appearance would lead one to infer that the cause is primarily lack of soil nutrients. Some planters attribute the condition of the rhizomes to deep planting. In the publication mentioned above the statement is made "Preliminary studies suggests that the active agent in this was a filamentous bacterium which was found to be abundant in the slime deposited by the mill water". Mr. Briant's report on these two diseases will be awaited with the greatest interest.

Tomatoes.

Mole Crickets (*Gryllotalpa sp.*) continue to cause loss and worry to growers of tomatoes. At the Experiment Station in some cases fifty and in others seventy-five per cent of young plants have been lost on account of this pest. They readily attack such plants as egg plant, pepper, tobacco, cabbage, sugar cane, lettuce, etc., but it would seem that they find tomato to be the most fascinating of all. Often young plants are cut down by them almost as soon as planted, on more than one occasion it has been done within an hour of planting in the ground, the young plants are not eaten, they are gnawed off at the base.

The full grown insect is about $1\frac{1}{4}$ inches in length and spends the greater part of its life below the surface of the ground. Its greatest specialisation for this is seen in the strong powerful fore legs. The insects respond to moisture changes in the soil. In wet spells their tunnels are within a few inches of the surface, in dry they are twelve or more inches deep. The eggs are laid in chambers of varying depth, the depth depending on the amount of moisture in the soil. Approximately a year is required for the full development of a generation, there are from seven to eight moults from the egg to the adult stage.

Attempts to control this pest with poisoned bait were made. The baits experimented with were flour and bran, cornmeal, tomato stems and chopped horse dung individually and as mixture. The poison used in these were either Paris green or arsenate of lead. No doubt some of the insects present were killed, but if so the decreased numbers were not perceptible.

In the Report on the Agricultural Department for 1931 various suggestions for the control of this pest were made and during the past year an attempt to find something that would form in the soil a protection for the young plants until established was made. A number of tins about six inches long and two inches wide without bottoms were obtained and these were placed over the young plants. Theoretically these should have formed a good protection as the cans were placed in the earth about four inches deep and were some two inches above the surface. It was realised that such a protection would be far too expensive in estate practice and leaves of the Mammee Apple tree (*Mammea americana*) were

also tried. These were used as they are about the right size to form a protective ring around the young plants, they are firm and do not crack. It is known that the tree yields a gum that is used as a cure for itch, and that the bark is a powerful astringent, and with these facts in mind it was assumed that the leaves would not in any way attract insects and might serve not only as a protection but also as a possible repellent.

On March 10th forty-five young tomato plants were set out in three series of fifteen plants each. In Series A the seedlings were surrounded by one large Mammee Apple leaf before being planted, one inch of the leaf was left above the soil surface. In Series B a hole was made in the ground, three to four Mammee Apple leaves were placed on the sides and then the young plants were planted in the depression, the tops of the leaves were above the surface as in A. In C, cans as mentioned above were used.

The plants were examined on the 11th, 13th, 15th, 17th, 20th and 22nd of the month. On the 15th all plots were supplied.

NUMBER OF PLANTS DESTROYED ON

Plot.	11th.	13th.	15th.	17th.	20th.	22nd.	Total.
A ...	0	2	1	1	0	0	4
B ...	1	5	1	3	1	5	16
C ...	0	2	4	2	3	10	21

In a further series where lime and flowers of sulphur were used in conjunction with Mammee Apple leaves as in Plot A, the sulphur and lime gave little or no protection, the plants which had the roots protected by leaves were not cut down.

From the above it will be observed that in Plots B and C more plants were destroyed than those originally planted. When supplying took place on the 15th three plants were put in Plot A seven in Plot B and six in Plot C, therefore the total number of plants planted in each were eighteen, twenty-two and twenty-one respectively. At the end of the experiment there were fourteen growing in Plot A, six in Plot B and none at all in Plot C.

The results from the plots in which the plants were protected by means of tin cans were surprising as it was thought that these would form almost a perfect guard. In this case the only reasonable assumption is that the insects entered the enclosed spaces around the plants from the soil below the cans.

This experiment indicates how severe the attacks of Mole Crickets were at the Experiment Station, and it also points out a simple and easy method of guarding young tomato plants from their ravages.

Progress in Chief Industries.

Foreword.

It cannot be said that the year 1932 brought any improvement in the economic conditions that prevailed in 1931. Sea Island cotton was the most severely affected of all St. Vincent's products. At the time of writing there are 1,707 bales of cotton unsold, of which 572 are stored in St. Vincent and the remainder in England. Valuing this at 1/- per pound, which is about half its value some eighteen months ago, it represents £31,000, a large sum of money for a small Colony.

As is noted elsewhere, a Cotton Conference was held at Barbados during the year under report, and among other things the importance of finding new uses for Sea Island cotton was stressed. The efforts made by Mr. E. Lomas Oliver, a fine spinner aided by others, to put on the market and popularise underwear, etc., made from pure Sea Island yarn are much appreciated locally, and it is felt that the success of these will go far to ameliorate the present position of the Sea Island cotton industry.

There was a substantial increase in the exports of copra, and although prices were low, they were just high enough to allow, in most cases, a small margin of profit. In addition there was a moderate increase in the production of arrowroot, for which there is now a good demand for all except the higher grades. The value of the exports of animals increased from £4,717 in 1931 to £6,018 in 1932, and there are also increases in the value of vegetables sent out of the island. Decreases in quantities of syrup, sugar, cacao, ground-nuts and maize exported are to be recorded. These are dealt with in other parts of this publication. The quantity of cassava produced was on a par with that of previous years.

A glance at the list of imports for the past few years indicates that the people of this Colony are importing less food stuffs than they did before the present World wide depression affected them. When compared with the figures for 1931 we find that imports of flour decreased 21 per cent, beans 47 per cent, oil 71 per cent, corn meal 21 per cent and fish 16 per cent. Going a step further and comparing the figures for corn meal and fish with those of 1930 we find that the decreases are 46 per cent, and 50 per cent, respectively. At no time during the period of depression has there been any question as to scarcity of food for the labouring classes, and this Colony is particularly fortunate in that they have been able to substitute imported food stuffs, with locally grown ones, as they have done with ease, which has only been possible on account of the diversified agriculture of the Colony.

Cotton Industry.

The return obtained from the Sea Island cotton crop for the season 1931-32 was 209,505 lb. of lint; the area was 1,802 acres, therefore the yield per acre works out at 116 lb., this is 37 lb. less per acre than the yield for the previous season, and was anticipated when the Report on the Agricultural Department for 1931 was written. The reasons for this were that during November and December, 1931, heavy rains were experienced. In some places young plants were washed out of the ground, and the soil was water logged for a considerable period of time. Some growers, on account of receipt of depressed market reports, made but half hearted attempts to cope with the difficulty, realising that poor prices would be obtained for their cotton, and that in all probability a long period would elapse before sales were effected.

Following the procedure of previous years, the appended tables are given. In these are put forward the number of peasant and estate growers of cotton for the past two seasons.

TABLE 1.

1932–33.

		Sea Island.					
		Acres	R.	P.	Acres	R.	P.
398	Peasants, St. Vincent	301	2	28			
10	„ Bequia	2	3	0			
408					304	1	28
9	Large Growers, 13 Estates, St. Vincent	334	3	0			
2	„ „ 2 „ Grenadines	30	2	0			
11	15				365	1	0
	Total Sea Island				669	2	28

		Marie Galante.					
		Acres	R.	P.	Acres	R.	P.
191	Peasants, Union Island	590	1	7			
46	„ Canouan	90	2	26			
237					680	3	33
2	Large Growers, Grenadines				120	0	0
	Total Marie Galante				800	3	33

TABLE 2.

1931–32.

		Sea Island.					
		Acres	R.	P.	Acres	R.	P.
894	Peasants, St. Vincent	941	0	8			
43	,, Bequia	22	0	14			
2	,, Battawia	3	0	0			
939					966	0	22
19	Large Growers, 33 Estates, St. Vincent	779	0	0			
2	,, ,, 2 ,, Grenadines	57	0	0			
21	35				836	0	0
	Total Sea Island				1,802	0	22

		Marie Galante.					
		Acres	R.	P.	Acres	R.	P.
212	Peasants, Union Island	634	3	8			
35	,, Canouan	71	2	0			
247					706	1	8
3	Large Growers, Grenadines				180	0	0
	Total Marie Galante				886	1	8

The figures appearing in Table 2 vary slightly from those in the Report for the year 1931.

From the preceding it will be seen that considerably less than half the area of Sea Island cotton was planted during the season 1932–33 when compared with the previous one.

The area under Marie Galante cotton shows a decrease of some 86 acres.

Returns from the 1932–33 Sea Island crop will not be particularly good. In the first instance the cultivation of the land was in most cases roughly carried out, and the subsequent care of the crop, such as weeding, etc., was not all that could be desired. A large proportion of one field, approximately 10 acres in area, situated in an exposed position was very badly damaged by high winds which were experienced towards the end of December and early in January. Some plants in this locality did not recover from the effects and died, others made an effort to recover, but the growth made was stunted, and the bearing reduced. Cotton caterpillars made their appearance early in 1933 in the island of Mustique and in several fields of cotton growing on the Leeward Coast. These, however, were not responsible for material damage. A sharp spell of dry weather was experienced in February and this seriously retarded the growth of late planted cotton.

In the following table the area under Sea Island cotton, weight of lint produced, and the return per acre are given for the past decade :—

TABLE 3.

Crops.	Area planted. Acres.	Weight of lint, lb.	Weight of lint per acre per lb.
1923–24	3,387	473,248	140
1924–25	3,294	449,295	136
1925–26	4,893	585,483	120
1926–27	6,156	507,240	82
1927–28	3,364	328,188	97
1928–29	3,386	263,808	79
1929–30	1,758	262,382	150
1930–31	3,955	605,280	153
1931–32	1,802	209,505	116
1932–33	669	74,259	111 *

* Estimated.

The annexed table has been compiled and shows the quantity of cotton exported for the periods indicated :—

TABLE 4.

Years.		Export of lint, lb.
1923	...	585,143
1924	...	520,368
1925	...	473,219
1926	...	588,793
1927	...	446,274
1928	...	349,246
1929	...	282,903
1930	...	256,167
1931	...	456,089
1932	...	148,860

The Sea Island cotton exported was valued at £8,392.

The quantity of Marie Galante exported was 68,033 lb., valued at £1,417.

West Indian Cotton Conference.

A Conference to consider the Sea Island cotton situation in the West Indies took place at Barbados on the invitation of the Governor of that Island. This was held from March 31st to April 7th. The delegates representing St. Vincent were His Honour, Chief Justice R. S. Thacker, and the Hon'ble A. M. Punnett.

The findings of the Conference were :—

1. *Type of cotton to be grown.* The Conference decided that the cultivation of Sea Island cotton in the British West Indies should be continued as the main crop.

2. *Cost of Production.* The Conference found that there was no great variation in the cost of production in the various islands.

3. *Minimum Selling Price.* The Conference found it was not advisable to attempt to establish a minimum price for Sea Island cotton under the conditions at present existing.

4. *Restriction of Output.* The several delegates undertook to recommend to their several Governments that steps be taken to ensure in the next planting season that the area to be planted should be restricted to an amount which would be calculated to yield not more than one-third of the average yield for the past ten years.

5. *Grading and Baling.* The Conference considered it essential that :—

(*a*) Some system of grading be adopted in each island.
(*b*) That standard grades be established for each island.
(*c*) That certified graders be attached or employed in each island.
(*d*) That a standard bale be adopted for all the islands as soon as practicable.

6. *Introduction and sale of Sea Island cotton goods.* The Conference was of the opinion that steps should be taken in all the British West Indian Islands and British Guiana to introduce and encourage the use of goods manufactured from West Indian Sea Island cotton, and that the delegates from the various islands should endeavour to make arrangements for merchants to stock goods so that they may be available for sale.

7. *Organization for effecting improvement of the cotton industry.* The conference decided that the formation of a West Indian Cotton Growers Association should be undertaken.

The findings are of extreme interest and value, and one of the most important is the seventh, which deals with the formation of a West Indian Cotton Growers Association. The Commissioner of Agriculture who was President of the Conference and the Cotton Adviser, to the Commissioner of Agriculture, Dr. S. C. Harland, were invited to be advisers to the Association. The work dealing with the formation of this was in the hands of the Commissioner of Agriculture. It is not proposed to deal at length with the objects. etc., of the Association, but one point should be noted and that is the suggestion that was made for each island to form its own local Association. This question was discussed at the St. Vincent Chamber of Agriculture and Commerce, when a resolution was passed that the Chamber should continue to represent the cotton growers as in the past, and to carry out the objects referred to in the same way as a Cotton Growers Association would. At this juncture it might be stated that the Chamber some years ago absorbed the St. Vincent Cotton Growers Association. At the same meeting a further resolution was passed in which suggestions were made to obtain funds to be applied to preliminary finance and administration of the West Indian Cotton Growers Association. The Committee of Management of the Government Cotton Ginnery promised to advance the funds required and the suggestion was made that this should be repaid by a tax on the cotton produced during the 1932–33 season.

The preceding shortly indicates the position in St. Vincent with reference to this move at the time of writing. There can be little doubt that it is one in he right direction and one worthy of hearty support.

Cacao Industry.

The following table gives the amount of cacao exported during the past decade :—

TABLE 5.

Years.		Weight, lb.
1923	...	121,374
1924	...	138,910
1925	...	154,821
1926	...	174,599
1927	...	135,490
1928	...	179,918
1929	...	156,405
1930	...	180,373
1931	...	146,990
1932	...	84,679

The exports of cacao were valued by Treasury Officials at £1,332.

Exports of this commodity in 1932 shows a decided drop, amounting to some 42 per cent. when compared with those of the previous year. There are several factors accounting for this. In the first instance there was increased consumption, and secondly neglect of cacao fields ; the price ruling for cacao was so low as to make it a gamble whether the cost of harvesting, fermentation, drying and freight would be covered. In London prices varied during the year from £2. 0. 0—£2. 14. 0 per cwt., in New York the fluctuations were from £1. 5. 8—£1. 8. 0. Cacao trees in St. Vincent are at the present moment no

regarded as being of great value, and in several instances they are being destroyed; the island has never been regarded as one eminently suited to the cultivation of this crop.

Starch.

All arrowroot produced in St. Vincent is handled by the St. Vincent Co-operative Arrowroot Association. Power is given to this Body to market arrowroot and to regulate and control the export thereof in Ordinance No. 15 of 1930; this was amended by Ordinance No. 15 of 1932.

The Association was financed by means of a loan from Colonial Development Funds. This was for the sum of £30,000, free of interest for five years, and thereafter at the rate of 5 per cent. per annum, to be payable within twenty years from the date of the original advance. An Ordinance No. 3 of 1931 was passed by the Legislative Council which authorised the Governor to make advances to the Association under the Colonial Development Act 1920, and to make provisions to secure the repayment thereof.

In addition to the above the Colonial Development Fund Advisory Committee placed £3,000 as a free gift at the disposal of the Association.

The Association now possesses imposing Offices and Warehouses, which are well built and are situated close to the sea front in Kingstown. The machinery installed consists of a mixer, a combined mixer and sifter, a centrifugal for fine sifting, a mill for grinding, and a machine for packing arrowroot in $\frac{1}{4}$ lb. and $\frac{1}{2}$ lb. packages.

The affairs of the Association are controlled by a Board of nine persons, six of whom are elected by the Association and three by Government. The Board holds meetings at least once a month, and two general meetings are held each year.

All arrowroot is graded by the Manager, and any grower dissatisfied with his ruling can appeal to the Board. There are five grades as follows :—

Grade 1.	Corresponding to the old grades	A—G.	Extra Superfine.
„ 2.	„ „ „ „ „	H—L.	Superfine.
„ 3.	„ „ „ „ „	M—Q.	Fine.
„ 4.	„ „ „ „ „	R—V.	Good.
„ 5.	„ „ „ „ „	W—Z.	Fair.

Previous to the inauguration of the Association, arrowroot was graded in twenty-six grades, each grade being represented by a letter of the alphabet.

The following advances for arrowroot were made during 1932 :—

Grade 1. $3\frac{1}{2}$ cents per lb. Grade 2. 3 cents per lb.
„ 3. $2\frac{1}{2}$ „ „ „ „ 4. $2\frac{1}{4}$ „ „ „
„ 5. 2 „ „ „

The above advances are made for arrowroot produced by estates, peasants receive an advance of 25 per cent, n addition. When sales are completed, expenses, etc:, deducted the remaining proceeds are divided pro rata among growers.

The quantity of arrowoot exported during 1932 amounted to 3,704,833 lb: The United States took 2,036,728 lb. and the United Kingdom 1,122,621 lb. The next best customer for arrowroot was Canada which took 258,497 lb., this was followed by France and Holland which imported 186,828 lb. The remainder was absorbed by Germany 47,358 lb., British Guiana 16,572 lb. and West Indian Islands 36,229 lb. There has been an increasingly steady demand for St. Vincent arrowroot in the United States of America, and perhaps it is not quite realised how rapidly this has grown. In 1922 some 55,088 lb. of arrowroot were shipped to the United States and if the export figures for 1932 are considered in conjunction with these it will be seen that they have during this period, increased

some thirty-seven times. To stress this important point the exports to the United States from the year 1922 to 1932 are given below. Exports to the United Kingdom are also inserted for comparison.

Year.	United States. lb.	United Kingdom. lb.
1922	55,088	1,727,152
1923	62,852	1,577,372
1924	376,843	1,952,830
1925	649,977	2,017,723
1926	914,379	1,739,054
1927	1,147,096	1,346,885
1928	1,408,672	1,933,436
1929	1,078,093	1,529,599
1930	1,084,536	1,496,300
1931	1,980,809	1,017,193
1932	2,036,728	1,122,621

Although the exports of arrowroot do not show a large increase for the year under report over those of 1931, increased areas planted during the past season was approximately thirty per cent. The reaping of the crop for 1932–33 is taking place at the same time as this Report is being written, and the results of the extension of area planted will not be seen in export returns for another year.

The following table gives the exports of arrowroot and cassava for the past ten years:—

TABLE 6.

Year.	Arrowroot. lb.	Value. £	Cassava. lb.	Value. £
1923	2,177,182	31,829	366,085	3,700
1924	2,952,537	51,361	624,631	6,838
1925	3,190,412	53,174	470,284	4,160
1926	3,291,553	45,807	443,075	4,077
1927	3,195,487	53,309	543,681	4,904
1928	3,870,420	64,508	392,610	3,272
1929	3,573,759	59,563	551,512	4,595
1930	3,590,348	59,019	562,327	4,688
1931	3,532,327	44,915	587,071	3,662
1932	3,704,833	47,524	518,888	3,241

Syrup and Sugar Industry.

During the year under report 200 tons of sugar were exported. This amount represents the quantity allocated to St. Vincent under the British Preference Tariff. The valuation placed on this by the Customs was £1,900. There is only one estate in the island which manufactures crystals, and an accident occurred in the sugar factory belonging to this estate in 1931. Some parts had to be ordered from the United Kingdom and this fact influenced output to a considerable extent.

At the end of 1932 between 1,000 and 1,300 barrels of syrup were stored in the island. Had these been shipped the exports for the year under report would have been on a par with those of the previous one.

As a result of experiments carried out some years ago by the Agricultural Department, the cane varieties B.H. 10 (12) and B.A. 11569 have taken the place of many of the older varieties. Recently P.O.J. 2878 has been grown in moderately large areas. It was clearly indicated during 1932 that this cane is easily uprooted by high winds.

The exports of sugar and syrup for the past ten years are given below :—

TABLE 7.

Year.	Sugar lb.	Value £.	Syrup Gallons.	Value £.	Total Value £.
1923	145,944	1,864	275,932	18,711	20,574
1924	22,400	280	261,127	15,578	16,038
1925	...	...	268,118	19,672	19,672
1926	...	...	337,099	16,523	16,523
1927	839,000	6,947	171,063	10,496	17,443
1928	2,081,408	14,193	167,044	9,471	23,671
1929	2,408,000	14,095	287,941	12,562	26,671
1930	1,834,560	9,209	183,786	7,360	16,569
1931	1,222,000	5,100	222,057	8,380	13,480
1932	448,000	1,900	164,040	5,994	7,894

In the following table sugar has been equated into terms of syrup, and syrup into terms of sugar, it being estimated that 300 gallons of syrup are equal to one ton of sugar.

TABLE 8.

Year.	Syrup, Gallons.		Sugar, Tons.
1923 ...	295,432	Equal to	984
1924 ...	264,127	,, ,,	880
1925 ...	368,118	,, ,,	1,220
1926 ...	337,099	,, ,,	1,123
1927 ...	283,563	,, ,,	945
1928 ...	445,744	,, ,,	1,486
1929 ...	610,441	,, ,,	2,035
1930 ...	429,486	,, ,,	1,431
1931 ...	372,057	,, ,,	1,240
1932 ...	324,040	,, ,,	1,080

All the sugar manufactured was sent to the United Kingdom, of the syrup 129,707 gallons were exported to Canada, and 34,333 gallons to the United States.

Coco-nuts.

The following table gives the exports of copra and coco-nuts for the past ten years :—

TABLE 9.

Exports of Coco-nuts and Copra—1923—1932.

Year.	COCO-NUTS.		COPRA.		Total Value. £.
	Number.	Value £.	Pounds.	Value £.	
1923	...	...	356,626	2,959	2,959
1924	4,841	22	645,973	5,430	5,452
1925	9,435	20	661,339	5,512	5,532
1926	20,463	102	762,563	9,826	9,928
1927	11,383	52	1,198,441	10,083	10,135
1928	26,703	113	1,505,093	12,543	12,656
1929	118,500	502	1,879,558	11,396	11,898
1930	66,418	273	1,810,167	11,312	11,585
1931	88,185	366	1,842,477	7,755	8,121
1932	72,130	281	2,227,631	11,426	11,707

It will be seen that there was a considerable increase in the quantity of copra exported which amounted to some 20 per cent. The price of copra remained low, in London during January 1932 it was £15. 18. 6 per ton, in July it was £14. 7. 6 and in December £15. 1. 9.

Progress in Minor Industries.

Maize (Indian Corn).

The quantity of maize exported amounted to 12,532 lb. or 241 bushels. It should be stated that there is a considerable amount of corn in store at the Government Ginnery.

TABLE 10.

Year.	Export, bushels.	Value £.
1923	4,696	1,326
1924	2,766	752
1925	2,754	627
1926	1,751	388
1927	1,901	619
1928	961	299
1929	808	239
1930	921	210
1931	325	72
1932	241	52

The above shows a decided decrease and there can be little doubt that apart from the quantity stored locally, there was an increased consumption taking the place of imported foodstuffs. All villages and land settlements are well epuipped with hand mills for the convertion of corn into meal.

Ground-nuts.

The quantity of ground-nuts exported during 1932 shows a decrease of 2,048 bushels when compared with that of the previous year. There has until recent years, been a good demand in Trinidad for ground-nuts grown in St. Vincent and the prices realised in that market have generally been higher than those quoted in others. Growers of this crop in some parts of the World have realised this fact, and are competing with local growers to capture it. The price ruling for ground-nuts for the past few years has been low and when this occurs more are consumed locally.

The exports for the past ten years are given below :—

TABLE 11.

Year.	Export, Bushels.	Value £.
1923	8,803	5,988
1924	6,195	4,438
1925	5,251	3,794
1926	3,673	2,370
1927	5,067	3,219
1928	6,444	4,176
1929	6,902	4,486
1930	5,557	3,610
1931	3,271	1,090
1932	1,223	398

The value of the above is from Treasury returns.

Peas and Beans.

The quantity of peas and beans exported was greater in 1932 by some 62 per cent than in 1931. Some of the land which had borne cotton in the past was put under peas. As a proportion of this has had its fertility depleted by continuous cotton cropping, the choice of this alternative crop was the best possible.

TABLE 12.

Year.	Export, Bushels.	Value £.
1923	2,482	1,595
1924	1,744	984
1925	1,548	866
1926	965	476
1927	745	352
1928	1,855	876
1929	3,398	1,673
1930	4,150	1,816
1931	1,031	385
1932	1,678	545

Barbados imported practically all of the peas and beans exported ; it took 1,626 bushels, leaving some 52 bushels which were absorbed by other West Indian Islands.

Miscellaneous.

The quantity of tomatoes exported was 191,007 lb. valued at £1,763, animals £6,018, vegetables £1,703, fruit £626, spices £295, hides £207, whale oil £120 and fire wood £111.

Rum Industry.

The number of proof gallons of rum exported was 10,169 valued at £1,525, a total of 34,638 was distilled. The rum exported was 2,389 gallons in excess of that sent out during 1931.

Manila Hemp.

Trials in connection with the cleaning of Manila Hemp were carried out by the Hagotan Hemp machine which was imported late in 1931. The power to drive this was obtained from an oil engine belonging to the Government Cotton Ginnery. During the trials it was found that the output was low. This, it was thought might be due to some mechanical fault, and the following engineers were consulted :—Messrs. MacDonald, Woods, Roberts, Gill and Scrace but no fault could be found by them either with the erection or working of it. At one time it was the opinion that a preliminary crushing of the leaves would help to solve the problem but this did not improve matters.

During one trial 425 stems were cleaned. These were obtained from Calvaries the property of Mr. P. N. Blair who gave the plants free of charge. The machine was worked for eighteen and a quarter days, and the rate of cleaning was 2·5 lb. per hour. The fibre content was between 2 and 3 per cent. The work was very laborious and on more than one occasion the labourers worked themselves to a standstill.

A bale of hemp weighing 380 lb. was obtained during this trial and sent to the Imperial Institute. It was valued at £21 per ton, the fibre being of excellent quality.

Letters were written to the makers of the machine and to the Bureau of Plant Industry, Manila, stating that a very poor out turn was being obtained and suggestions and directions were asked for with the view of improving this. The makers did not give any directions other than those that had been tried. The Bureau of Plant Industry stated "Its performance varies very widely depending on the kind of abaca that is being stripped. With large abaca stalks grown in good soil and under favourable climate, it may strip as much as 60 kilos or over in 10 hours. But it may strip even less than 2 lb. per hour". From the preceding it would seem that soil and climate play an important part in producing stems, which when stripped by this machine, give the output claimed by the manufacturers. From experience obtained it is evident that there is something in one, or both of these factors, that inhibits the formation in St. Vincent of abaca stems which lend themselves to easy stripping in the same way as some do when grown in the Philippine Islands.

Plant and Animal Legislation, 1932.

The Ordinance enacted in 1931 to provide for the Exportation of Fruits was repealed, and Ordinance No. 1 of 1932, was promulgated in its stead. This provides for the packing, inspection, cold storage, etc., of fruit or vegetables shipped to certain markets.

An Ordinance to regulate the importation of animals into the Colony for the purpose of preventing the introduction of contagious or infectious diseases of Animals, was published on June 30th. This repealed the former Cattle Diseases Prevention Act, but it did not affect the validity of any orders or regulations made under that Ordinance. The Ordinance promulgated in 1932 provides for prohibition of importation of animals, provision of veterinary certificates when animals are imported, inspection of animals at port of entry, declaration of infected areas, etc.

A Close Season for cotton under the Cotton Protection Ordinance, beginning on the 1st day of May and ending on the 31st day of August, 1932, was declared by an Order in Council.

An Order made on May 10th, 1924, prohibiting the importation of animals from the British Islands and Jamaica was rescinded and gazetted on April 22nd.

On October 26th an Order in Council was gazetted prohibiting the importation of banana suckers and soil or plants growing in soil until further notice.

Visits of the Assistant Commissioner of Agriculture, Agricultural Advisory Department, Imperial College of Tropical Agriculture.

The Assistant Commissioner of Agriculture, Mr. G. A. Jones, visited St. Vincent on two occasions during 1932, i.e., from January 28th to February 12th and from November 1st to 15th. Reports on both visits were submitted and a short account of each is given below.

January 28th—February 12th. This visit was made mainly to assist in ascertaining the value of certain estates for land settlement purposes. *A number of properties in the island were offered for this purpose, two of which were considered specially suitable. These were inspected by the Assistant Commissioner

*A total of twelve properties were offered. All of these were valued by the Agricultural Superintendent, either by himself or in conjunction with the Superintendent of Works.

of Agriculture and the Agricultural Assistant. In the case of one property it was recommended that the scheme be proceeded with, and subsequently the estate known as Three Rivers was purchased.

In this report questions dealing with the arrowroot industry were dealt with, the demands of certain markets, stocks held by them, and recommendations were made as to how certain grades of arrowroot should be disposed of. Mention is made of the special efforts of the West India Committee to push the sales of arrowroot in Great Britain. The decision locally arrived at to discontinue these is regretted. A list of the investigations required in connection with arrowroot agriculture was put forward.

The cotton industry and affairs pertaining to the Government Cotton Ginnery were discussed at length. The affairs of the Cotton Research Station, Marketing Depôt and the Fruit and Vegetable Industry were all discussed, and useful comments or recommendations made with reference to each.

November 1st—15th. The object of this was to carry out a general inspection of the activities of the Agricultural Department and to note the condition of the chief agricultural industries. Land settlement and the arrowroot industry were first considered. Three Rivers estate had just been purchased for land settlement purposes before Mr. Jones' visit. This estate is some 740 acres in area. When dealing with arrowroot the important appointment of Mr. C. K. Robinson as Scientific Officer to the St. Vincent Arrowroot Board was mentioned. One very significant statement dealing with arrowroot factories is made, it is as follows:—"It is recognised by the Arrowroot Board that there is a great need of improvement in manufacturing methods on the estates and it would not be surprising to find some of the leading planters facing this problem in the near future." Comments and recommendations are made in connection with the Cotton Industry, Coco-nut Industry, Agricultural Credit Societies, School Gardens and Marketing Depôt.

Agricultural Instruction, Education and Co-operation.

The Report on Agricultural Credit Societies appears in another part of this publication. Agricultural Officers paid frequent visits to estates and peasant holdings during the year. The Agricultural Superintendent attended twenty-five meetings, each dealt with matters pertaining to agriculture.

Results of Pupil Teachers Examination in Agriculture, 1932.

The Agricultural Superintendent set and marked the papers for this examination. Twenty-eight candidates sat, 18 First Year, 7 Second Year and 3 Third Year students. Of the First Year 11 passed and 7 failed to satisfy the examiner. All of the Second Year and one of the Third Year students passed. It will be observed that the number of passes was high, but a large proportion of the students, and this specially applies to the First Year ones, just obtained the minimum or a little better than the minimum pass marks. It is not proposed to give details of the examination ; the scholars who headed the list were First Year, Edmund H. Israel, Marriaqua Government School ; Second Year, Weston Henderson Lewis, Georgetown Government School ; Third Year, Donald Phillips, Brighton Wesleyan School.

Grammar School Garden Syllabus.

During the year the Agricultural Superintendent at the request of the Headmaster put forward a syllabus for the first and second year students at the

Grammar School for school garden work. This may be of interest and is as follows :—

First Year. Seed sowing (boxes and beds), making and drainage of boxes. Mixing soil. Transplanting. Preparing land and making beds. Transplanting in pots, tins, baskets. Drainage of pots. Measurements of beds. Computing number of plants per acre. Propagation of plants by cuttings (in soil and water), leaves, roots, division, layering, circumposition. Dispersal of seeds. Planting hedges, pruning hedges. Transplanting of seedlings. Measurements of growth. Weighing of produce.

Second Year. Planning of year's work for first and second year students. Making plan of garden. Grafting—top working. Approach and wedge grafting. T and inverted T budding. Growing of stocks. Seed testing. Effect of various manures (liquid, organic, artificial, mulching). Pruning plants. Growing of green dressings. Preparation of common insecticides and fungicides. Life history of common insect pests. Meteorological Observations, Reading of Thermometer, Rain Gauge, Clouds and Barometer, Making of compost heap. Drying and mounting of plants.

Second year students would take meteorological readings on instruments belonging to the Experiment Station. When such readings are taken they would be accompanied by an Officer attached to the Station.

The Glen Community School.

The Glen Community School was opened on January 4th, 1933. Funds for the purchase of the land, which is 38 acres, and for buildings were provided by the Methodist Missionary Society. The Glen is situated about four miles from Kingstown and adjacent to the town of Calliaqua, to which it will prove a valuable asset especially as agriculture forms part of the curriculum. In addition to the ordinary elementary school subjects, the boys are taught handicrafts such as carpentry, mason work, shoe repairing and type setting, etc., and the girls gardening, housework, sewing, etc.

The Principal is the Revd. W. H. Richards and the Headmaster Mr. C. Hynam who is a graduate of the Imperial College of Tropical Agriculture, Trinidad. These with three assistants comprise the staff.

Some of the buildings were erected in 1932. The school house is well designed and strongly built being 80 feet long and 20 feet wide and is divided by screens into four class rooms.

This movement is one of importance to the Colony and the Agricultural Department will assist in any way possible. The general lay out of the grounds as regards orchard, ornamental grounds and land for general crops has been discussed by the Agricultural Superintendent with the Headmaster.

The Department has been instrumental in teaching some of the boys the rudiments of broom making at the Experiment Station and the School will soon be growing a crop of broom corn with which to carry on this work. Plants of citrus stock have been supplied and lessons in budding and grafting mango and orange plants have been given to some of the pupils. It is proposed to give further lessons in plant propagation, preparation of insecticides, etc., in the near future.

Science Teaching.

This work is done by the Science Master, Mr. D. S. Cozier, who is attached to the Grammar School. Mr. Cozier is an ex-student of the Imperial College of Tropical Agriculture, Trinidad.

Details of Staff and Administration.

The sum of £2,358 was voted for the upkeep of the Agricultural Department during 1932. This shows an increase of £578 over that for 1931 which is due in the main to transfers from Head Miscellaneous to that of Agriculture; one item alone, i.e., Contribution to Imperial College of Tropical Agriculture was £338, another item which accounts for the increase is that which provides for the salary and allowances of the Agricultural Assistant.

The following gives details of expenditure :—

	£	s.	d.
Salary, travelling allowance, Agricultural Superintendent ...	450	0	0
Salary, travelling allowance, house allowance, Agricultural Assistant	440	0	0
Salaries, Foreman, Botanic and Experiment Stations, Cotton Inspector, Officer in Training, Clerical Assistant, Laboratory Assistant to Cotton Research Officer, and travelling allowances, Cotton Research Officer and Cotton Inspector	350	9	1
Upkeep, Botanic and Experiment Stations, (labour, manures, tools, seeds, etc.)	552	16	8
Destruction of food plants of the Cotton Stainer ...	2	11	9
Salary, Government Vaccinating Officer ...	20	0	0
Special Cotton Investigations	26	16	1
Special Services	24	13	10
Hagotan Hemp Machine	14	8	3
Contribution to Imperial College of Tropical Agriculture ...	338	0	0
Contributions to various Scientific Institutions Bureaux and Unified Agricultural Services	40	0	0
Total	2,259	15	8

Receipts.

The receipts for sale of plants and produce at the Experiment Station amounted to £91. 0. 4.

Correspondence and Distribution of Information on Agricultural Matters.

The number of minute papers dealt with amounted to 359 and the number of letters despatched was 636, in addition 225 reports were distributed.

Meteorological Observations.

The average rainfall for the past 39 years at the Botanic Gardens was 102·99 inches. The rainfall for 1932 was 94·52 inches, therefore 8·47 lower than the average.

Rain was recorded at the Botanic Gardens on 271 days; the heaviest fall was on October 8th when 4·52 inches fell. At the Experiment Station rain was recorded on 267 days, the heaviest fall being on October 8th when 4·77 inches were registered.

The following table gives the mean temperature, average degree of humidity and the mean barometric pressure in inches for each month during the year :—

METEOROLOGICAL OBSERVATIONS, EXPERIMENT STATION, FOR 1932.

TABLE. 13.

Month.	Mean Temperature F°.	Average degree of humidity Saturation 100.	Mean Barometric pressure in inches.
* January ...	—	73·7	29·946
February ...	77·8	68·9	29·994
March ...	79·2	69·9	29.987
April ...	81·5	79·5	29.933
May ...	80·7	72·7	29·973
June ...	80·2	76·3	29·941
July ...	80·7	73·9	29·980
August ...	81·2	75·6	29·937
September ...	82.0	71·9	29·933
October ...	81·4	80·3	29·931
November ...	80·9	75·7	29·881
December ...	78·7	77·2	29·988

* Thermometer out of order.

Atmospheric Pressure.

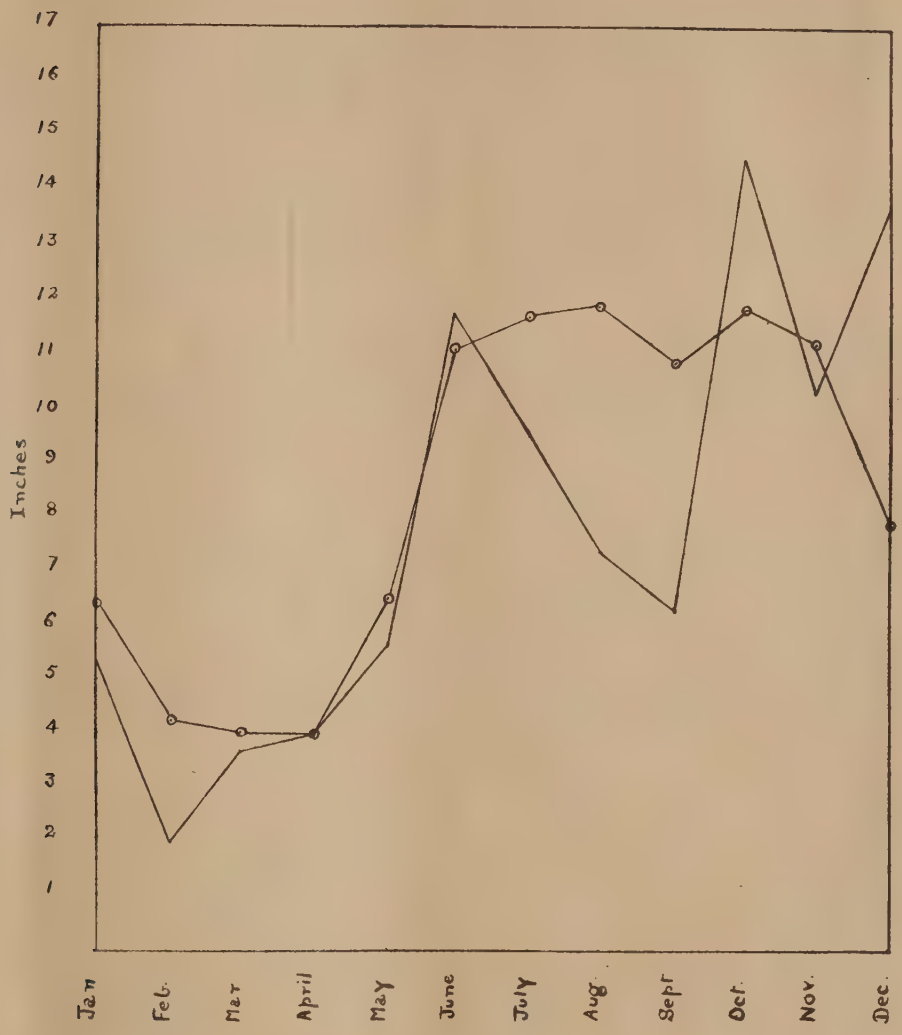
The reading of the barometer, corrected for instrumental error, elevation, temperature and latitude, ranged from 30·112 on February 5th to 29·811 on 20th October.

The following gives the rainfall recorded at the various Stations for 1932:—

TABLE 14.

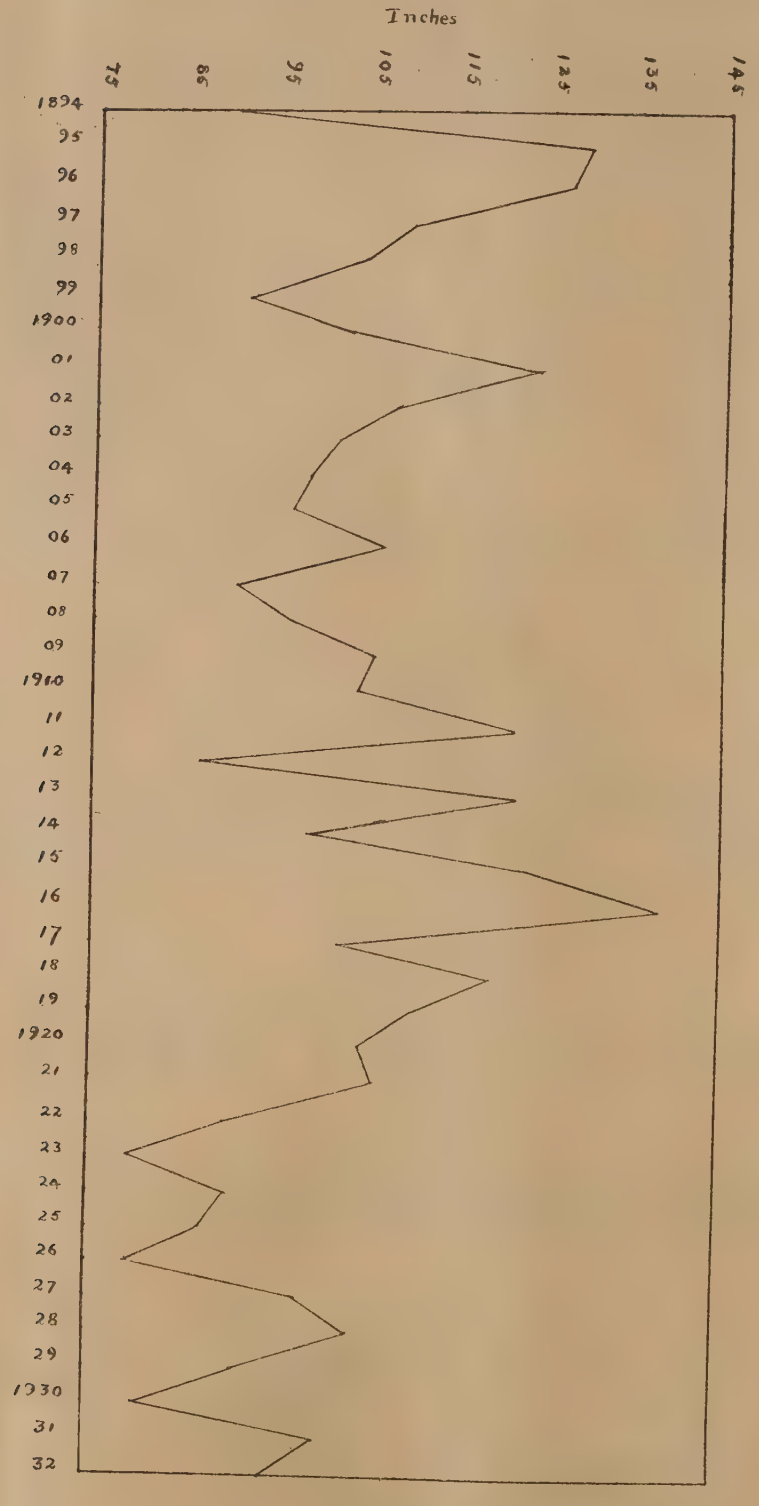
Stations.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Richmond Vale ...	7·80	2·91	3·74	3·47	7·08	14·66	10.27	13·49	9·37	12·37	14·75	11·64	111·55
Experiment Station ...	4·48	3·26	3·46	3·98	6·61	12·32	8·03	10·00	7·99	12·06	11·95	14·45	97·59
Botanic Gardens	5·31	1·93	3·73	4·03	5·78	11·89	9·58	7·38	6·34	14·56	10·37	13·62	94·52
Colonarie ...	2·85	2·90	3·82	4·09	5·01	7·71	7·03	9·60	5·14	9·65	24·00	11·25	93·05
Cumberland ...	5·25	1·90	2·16	1·96	7·66	11·09	9·13	7·74	9·40	9·49	11·59	9·48	86·85
Sans Souci ...	2·18	2·81	3·33	3·08	4·13	8·64	8·10	8·10	5·87	8·79	19·01	10·42	84·46
Peters Hope ...	3·30	1·00	1·69	1·90	4·47	11·75	6·54	13·33	6·46	9·32	8·81	8·44	77·01
Bequia ...	3·06	1·57	3·40	4·02	3·03	6·47	8·02	6·35	4·00	10·72	8·82	8·17	67·63
Brighton ...	3·17	1·45	2·34	1·52	4·56	6·88	4·56	5·87	3·67	8·77	11·61	9·02	63·42
Union Island ...	3·37	1.00	2·26	·46	1·88	3·65	2·93	5·05	4·65	6·90	9·00	9·25	50·40
Canouan ...	3·17	·77	1·16	·72	3·57	7·13	2·62	5·11	4·01	6·20	7·06	4·68	46·20

Monthly Rainfall, Botanic Gardens, St. Vincent, 1894-1932.



Black line -- represents Monthly Rainfall, 1932.
Dotted line — represents Mean Monthly Rainfall, 1894-1932.

Annual Rainfall, Botanic Gardens, St. Vincent, 1894-1932.



Official Visitors, 1932.

The Assistant Commissioner of Agriculture visited St. Vincent on two occasions during the year, i.e., from January 28th—February 12th and from November 1st—November 15th. A note on the Reports which he wrote in connection with these two visits appears in another part of this publication.

Dr. Fairchild, United States Department of Agriculture, accompanied by Mrs. Fairchild and Mr. Allison V. Armour, visited the Botanic Gardens and Experiment Station on February 4th and 5th. He was attached to the Allison V Armour Botanical Expedition and landed from the yacht Utowana.

On February 7th Surgeon Commander Tozar, attached to H.M.S. Repulse visited the Botanical Gardens. He was collecting mosses, etc., for the British Museum. Arrangements were made for him to visit and collect specimens in various parts of the island.

Mr. A. C. Shill, M.Sc., A.R.C.S., D.I.C., Marketing Officer, Windward and Leeward Islands, visited St. Vincent from February 12th—19th and from July 25th—29th. His visits were in connection with the general supervision of Fruit and Vegetable Bureau, and advising with reference to packing and marketing of produce.

On March 18th Mr. A. A. Stockdale, C.M.G., C.B.E., Agricultural Adviser to the Secretary of State for the Colonies visited St. Vincent. He attended a meeting of the Board of Management of the St. Vincent Co-operative Arrowroot Association and discussed with members the organisation and working of the Association, and various problems concerning the marketing and growing of arrowroot were also discussed. Mr. Stockdale also visited the Government Fruit and Vegetable Bureau, the Experiment Station and the Botanic Gardens, Subsequently he consulted with His Honour, The Administrator, at Government House.

Mr. G. Evans, M.A., C.I.E., Principal, Imperial College of Tropical Agriculture, accompanied by six Post Graduate Students visited St. Vincent and remained in the island from March 25th—April 1st. Such matters as Sea Island cotton and arrowroot industries were gone into as were the tomato industry and the working of the Arrowroot Pool. A party of seventeen Post Graduate Students conducted by Professor R. C. Wood, M.A., Dip. Agric., and Mr. D. D. Patterson, B.Sc., landed in St. Vincent when on their way to St. Lucia and spent a few hours in visiting the St. Vincent Co-operative Arrowroot Association buildings, Experiment Station and an estate on which tomatoes were being grown on a moderately large scale. They again landed on their return voyage to Trinidad.

Professor F. Hardy, M.A., spent a few hours on shore on April 15th. He took advantage of this and paid a hurried visit to an estate.

Assistant Professor Mr. F. W. Urich, F.E.S., C.M.Z.S., visited St. Vincent from April 13th—22nd. A note on this visit will be found in another part of this publication.

Dr. S. C. Harland, Geneticist, Cotton Research Station, Trinidad, visited St. Vincent in March. His visit was made in connection with cotton research work conducted at the Experiment Station by Mr. S. H. Evelyn.

Veterinary Report.

Microscopic examination of ears was discontinued.

Exports.

The following gives the number of animals exported for which no certificates were given :—

TABLE A.

Class of Annimal.	Number.	Value. £
Sheep ...	504	261
Goats ...	2,366	839
Pigs ...	2,068	3,481
Total ...	4,938	4,581

TABLE B.

Showing kind, number and value of stock for which veterinary certificates were given, also the places to which the animals were exported.

Class of Animal.	Barbados.		Trinidad.		St. Lucia.		Total.	
	No.	Value. £	No.	Value. £	No.	Value. £	No.	Value. £
Cattle ...	73	466	4	14	—	—	77	480
Horses ...	18	217	2	17	—	—	20	234
Asses ...	63	106	106	177	—	—	169	283
Mules ...	1	10	2	14	—	—	3	24
Sheep ...	—	—	—	—	1	1	1	1
Goats ...	11	7	—	—	—	—	11	7
Dogs ...	1	5	—	—	—	—	1	5
Total ...	167	811	114	222	1	1	282	1,034

TABLE C.

Seventeen animals valued at £246 were imported. Details are given in the following.

Class of Animal.	Number.	Value. £
Cattle ...	2	120
Horses ...	3	66
Asses ...	1	15
Sheep ...	4	5
Dogs ...	7	40
Total ...	17	246

Certificates were granted for 2,641 hides valued at £81. 1,348 valued at £126 were exported without certificates.

SECTION II.

REPORT ON THE COTTON EXPERIMENT STATION.

Period September 1st., 1932, to March 31st., 1933.

A. General.

Although the germination all over the Island was excellent yet subsequent climatic conditions were very unfavourable to good growth and yield. However, due to the fact that the seeds released in September 1932 had been selected for high resistance to bud-shedding and Angular Leaf Spot, a good yield was still obtained.

With the exception of Cotton Stainers the damage done by pests can be said to be negligible. Although a Close Season of 3½ months was observed all over the Island yet Cotton Stainers made their appearance early and in large numbers. It must, however, be borne in mind that the 3½ months Close Season refers to the field and not to seed cotton, cotton seed and meal in the ginneries. It is fairly apparent that until some system is devised whereby the Ginneries can observe a lengthy Close Season there is very little chance of thoroughly controlling Cotton Stainers. It was obvious that the lengthy Close Season did much to control Pink Boll Worm as only a few of these pests were to be seen this season and their damage was negligible. A species of bug of the family *Tingidæ* was observed sucking at the backs of the cotton leaves. Although only sporadic cases occurred yet to judge from the damage these pests can do to the leaf they will bear watching.

Through the constant rains a fair amount of loss from External Boll Disease occurred throughout the Island. It has been found, however, that with proper drainage this disease becomes negligible or disappears altogether. In this connection it is urged that the fork should be employed in the preparation of cotton banks in preference to the hoe, as due to constant traffic through the furrows of one season, which furrows become the banks of the next season, a pan is formed, and this is proved by the fact that on pulling up a plant the tap root is balled and twisted instead of being straight. This naturally weakens the plant which is not anchored properly nor can it get the nourishment it should—particularly now when field cultivation is not all that could be desired. In the Season 1931-32, when all of the cotton plots at the Station were prepared by the fork, not a single case of External Boll Disease was observed—this season through lack of funds and labour the banks were hoe-made and a fair percentage of the disease was observed in all of the plots.

B. Experimental.

Purification of Island's Crop. As a result of purification by selfing and selection enough seed was obtained of pure V.135 to multiply 9 acres in an isolated area in the Season 1931-32. Seed from this area was released in September 1932 and was sufficient to plant the Island's Crop of 650 acres. Test measurements performed on random samples from many estates and peasants show that the Island's Crop is pure. The Mean Maximum Lint Length obtained from 1,450 measurements of samples representing the cotton of the whole Island (and Mustique Island) was 57·4 mm. It is of interest to record that prior to September 1932 the Island's Crop was 58% impure and measurements made on samples of the 1931-32 Crop gave a Mean Length of only 53·8 mm. Thirty

acres of a better strain of V.135 were grown, through the courtesy of the Hon. A. M. Punnett, at Diamond Estate this season, and on measuring a random sample of this a Mean Length of 57·7 mm. was obtained, although it was planted late. The seed from this area will form the Island's 1933-34 Crop. Lint of this was sent to England in 1932 and the following is an extract of the report received from the Fine Spinners and Doublers' Association:--

"The spinning quality of the Experiment Station cottons (Nos. 1 and 2) is exceptionally good. These cottons are among the best we have spun here."

Red Sea Island. Strains pure for red plant body and lint length of 57 mm. have been obtained this season, but it is not certain whether all of the unwanted genes of the Red Kidney parent have been eliminated so that backcrossing to V.135 is still being done. The chief value of this strain lies in (*a*) the facility to spot impure plants, (*b*) its high resistance to Angular Leaf Spot and other diseases and (*c*) its high resistance to damage from wind, due apparently to its very strong root system inherited from its perennial parent—Trinidad Red Kidney.

Hybridization Experiments. These are still being carried on as promising results are being obtained, particularly in the Moco X Sea Island and Moco X Marie Galante crosses, the latter is especially promising.

Moco and Improved Marie Galante Strains. As a result of his visit to Carriacou and Union Island, Dr. Harland has outlined a policy whereby all of the drier Grenadines which grow perennials will have their present cotton substituted by a pure strain of Moco or Improved Marie Galante by 1935. Although full results of the Moco and Marie Galante strains grown at the Station have not yet been obtained those that have been demonstrate the fact that we now have pure strains of these 2 types which can be multiplied for the purpose above mentioned.

Miscellaneous Experiments. Many miscellaneous experiments were carried out this year but as these are of an entirely technical nature and will appear in the Empire Cotton Growing Review or Reports from Experiment Stations they will not be discussed here.

C. Visits.

Dr. Harland visited the Station from 12th to 17th February, for the purpose of discussing the season's work and laying out a programme for next season.

I should like to take this opportunity of recording my appreciation of the work performed by my assistant, Miss N. Grant, and to thank the Staffs of the Agricultural Department and Government Cotton Ginnery and the Cotton Planters for their co-operation in this work.

SECTION III.

REPORT ON AGRICULTURAL CREDIT SOCIETIES.

The Clare Valley Questelles Society was the only one which functioned actively during the year under review. This was due to the inability of the other Societies to obtain loans. The following gives a brief report of the four Societies still registered :—

Clare Valley Questelles. This Society is in a very healthy financial state, having a reserve fund of £16. 4. 2, and a Profit and Loss Account of £77. 12. 6. These amounts together with £20. 16. 8 borrowed from a private individual, are loaned out to members. Should this Society continue to progress as at present, in a few years' time it will be self-supporting. The success of the Society is largely due to their very efficient Secretary.

Redemption. There has been no transactions in this Society for the year.

Troumaca. This Society has paid off the Chateaubelair Providence Society in full, and now only owes the Troumaca Providence Society £40. This is a much improved state of affairs, but it is regrettable to note that there is lacking that spirit of co-operation and trustfulness which is so essential to the smooth and efficient working of a Society. Money in this District is very scarce owing to the slump in cotton which was the staple industry.

Georgetown. This Society has paid off all loans and has a reserve fund of £35. 10. 10, £24. 10. 0 of which is invested in the Government Savings Bank. The chief obstacle of this Society in the past, has been that its members were drawn from too large an area. This could now be rectified by splitting the Society and forming a new Society in the Park Hill District which is the centre of a large Land Settlement Scheme.

All these Societies are desirous of continuing, as members realize their value and the benefits that accrue from them. Certain districts in which there are not at present registered Credit Societies, are desirous that Societies be formed in their midst, but little development need be expected until the Government can see its way to advance loans to the Societies, or at least, act as security for the loans advanced. The present low price of money should be taken advantage of, and a loan floated for the purpose of making advances to the Societies. The example of the Trinidad Government could be followed, where in the Island of Tobago, approximately fifteen Societies are obtaining advances from Government, usually for a period of three years at an interest rate of 4% per annum.

Acting on numerous petitions and applications that were received from peasants, etc, for land in Charlotte Parish, the Government purchased in November, from Mr. E. M. Beach, the Three Rivers Estate, an area of approximately 730 acres, for the purpose of extending the Land Settlement Scheme. That there is a definite hunger for land in the District cannot be doubted. The example of how a man who has his own plot of land improves his financial and social standing, is realized by all, and the labourer wants to follow his example ; while he who already has, desires more. The people in this District are very keen to see the Credit Society movement revived, and are looking forward expectantly to Government to do something in the matter. The same may be said of the people of Biabou, where a private Land Settlement Scheme is in operation.

There used to be a Credit Society in Biabou which when it was dischartered, had a credit balance of over £35. One of the main reasons why the Society ceased to function, was that most of its members were renters of lands on Biabou Estate ; and when that estate ceased to rent lands, members had no need for the Society.

The useful purpose that Credit Societies form as a connecting link between the Agricultural Department and the Peasant should not be lost sight of, as it gives the Department a better opportunity of instructing peasants in improved agricultural methods and advice in the control of diseases or pests.

SECTION IV.

REPORT ON THE GOVERNMENT FRUIT AND VEGETABLE BUREAU.

During the year the following produce was shipped. For comparison that shipped in 1930 and 1931 is also given :—

TABLE 1.

Produce.	1930.		1931.		1932.	
	Crates.	lbs.	Crates.	lbs.	Crates.	lbs.
Avocado pears ...	555		572		840	
Cabbages ...		720		428		320
Cucumbers ...	15		14		4	
Eschalots ...		400		229		
Ginger ...		350		100		
Grape fruit ...	121		10		7	
Limes ...	150		195		202	
Mangoes ...	236		285		79	
Oranges ...	30		17		6	
Onions ...		2,350		832		
Peanuts ...		2,200		2,848		
Pineapples ...	5		6		10	
Pumpkins ...		4,750		13,899		2,700
Sweet Potatoes ...		784			20	
Tomatoes ...	674		1,770		3,480	
Yams ...		640		2,793		320
Miscellaneous ...	8	2,752	15	198	19	650
	1,794	14,946	2,884	21,327	4,667	3,990
% Increase or Decrease over 1930 ...	00 %	00 %	+ 61 %	+ 43 %	+ 160 %	— 73 %
* Grand total in lbs.		59,796		93,427		120,665
% Increase or Decrease over 1930 ...		00 %		+ 56 %		+ 102 %

* Taking average weight of crate as 25 lbs. net.

The above table shows that there has been a steady increase in the quantity of produce shipped. This increase is most noticeable in the case of tomatoes 3,840 crates being shipped compared with 1,770 in 1931 and 674 in 1930. Shipments commenced in January and extended to May. The peak of the season being in March. The whole crop was shipped to Canada with the exception of 18 crates shipped to Bermuda in November month.

The prices realized however were very disappointing and unsatisfactory, mainly due to the Canadian public's low buying power, caused by the financial depression, and also to over-supplied markets. When the Bahama shipments began to go off the market in early March, Mexico started shipping in heavily, which made conditions worse than ever. This is not likely to happen again in the near future, as at the Ottawa Conference, it was agreed that Empire grown tomatoes would enjoy a preference of 1d. per lb. in Canada, which should benefit the West Indies considerably.

One penny a lb. was advanced to growers for all tomatoes accepted, and a bonus was to be paid at the end of the crop, should there be any surplus after all expenses etc., have been paid. This advance was justifiable, as for the previous year, tomatoes realized a nett amount of $1\frac{3}{4}$d. per lb. which was paid to growers as 1d., advance and $\frac{3}{4}$d., bonus. The poor prices obtained this year however, did not cover the expenses and the advance of 1d. per lb., by £182. 2. 9—as the Bureau's commission (10%), amounted to £40. 11. 0., the actual loss amounted £141. 14. 9. The following table gives a brief summary of the position :—

TABLE II.

TOMATOES.

Amount Advanced.	Other Local Expenses.	10% Commission.	Freight and Canadian Expenses.	Total Expenses.	Gross Sales.	Loss.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
317 11 0	231 18 $4\frac{1}{2}$	40 11 0	307 1 7	897 1 $11\frac{1}{2}$	714 16 $2\frac{1}{2}$	182 5 9

Green lime shipments also show a slight increase, and are the brightest spot in the year's trading. Limes were bought outright at $\frac{1}{2}$d., and $\frac{1}{3}$d., per lb.—a price that satisfied peasants, who before the inauguration of the Bureau, had no market for what was not consumed locally. 10 crates were shipped on trial to Canada by each each Lady Boat during the summer months, and very satisfactory returns were received. Now that a definite demand has been created, shipments to this market for the coming crop will be much heavier. Bermuda shipments also turned out very satisfactorily, as well as did a trial shipment to London.

The following table summarizes the position :—

TABLE III,

LIMES.

Consigned To.	Cost of Limes.	Other Local Expenses.	Freight and Agents Expenses.	Total Expenses.	Gross Sales.	Profit.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Canada ...	2 8 $3\frac{1}{2}$	2 18 $4\frac{1}{2}$	6 17 10	12 4 6	20 14 $9\frac{1}{2}$	8 10 $3\frac{1}{2}$
United Kingdom ...	3 5	7 3	15 $3\frac{1}{2}$	1 5 $11\frac{1}{2}$	1 19 0	13 $0\frac{1}{2}$
Bermuda ...	11 16 0	10 18 $2\frac{1}{2}$	17 13 $5\frac{1}{2}$	40 7 8	51 10 11	11 3 3
Total ...	14 7 $8\frac{1}{2}$	14 3 10	25 6 7	53 18 $1\frac{1}{2}$	74 4 $8\frac{1}{2}$	20 6 7

Mango shipments were made to Bermuda and England. No shipments were made to Canada, as last year's returns were not encouraging enough. All grafted varieties shipped to Bermuda show a profit, whereas common mangoes shipped there, would not cover expenses. Consignments to England did well, but the

percentage of fruit that go bad intransit, greatly decrease profits. With improved cold storage facilities however, and greater experience as to the correct stage of maturity for packing, this handicap should gradually disappear. Julie mangoes were bought at ½d., each, and other varieties at slightly lower rates.

The quantity of grafted mangoes available for shipment, is at present very small, but should considerably increase in the near future, considering the number of grafted plants being planted, and the amount of top-working that is being done by the Agricultural Department.

The following table summarizes shipments :—

TABLE IV.

MANGOES.

Consigned To.	Cost of Mangoes.	Other Local Expenses.	Freight and Agents Charges.	Total Expenses.	Gross Sales.	Profit.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bermuda ...	6 0 3	4 2 4	7 6 8	17 9 2	20 11 0	3 1 10
United Kingdom ...	1 0 9	1 1 4	2 0 2	4 2 3	4 16 0	13 9
Total ...	7 1 0	5 3 8	9 6 10	21 11 5	25 7 0	3 15 7

There was a decided increase in the quantity of pears shipped—840 crates compared with 572 in 1931. The following table shows however, that the business done was not too encouraging :—

TABLE V.

AVOCADO PEARS.

Consigned To.	Cost of Pears.	Other Local Expenses.	Freight and Agents Charges.	Total Expenses.	Gross Sales.	Loss.	Profit.
	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
Bermuda ...	42 8 10	46 7 11½	91 11 2½	180 8 0	159 15 0	20 13 0	
Canada ...	3 13 2	4 1 9½	6 14 1	14 9 10½	1 17 3½	12 12 7	
U. Kingdom ...	1 6 9	1 16 8½	4 4 11	7 8 4½	9 1 6		1 13 1½
Total ...	47 8 9	52 6 5½	102 11 0½	202 6 3	170 13 9½	33 5 7	1 13 1½

Pears were bought outright at ½d. each.

Profits were made on pear shipments to Bermuda in July and December, but during the peak of the season heavy losses were sustained. This was partly due to the limited market being over-supplied. Jamaica, St. Lucia, and Dominica are the chief competitors, and the most feasible solution to this problem is in my opinion that the islands should come to some agreement whereby shipments would be limited, and each island only send a stipulated quantity. As with limes 10 crates were sent by each Lady Boat to Canada. The idea being that if 10 crates went on the market every fortnight, they had a better chance of becoming known, than if one large advertising shipment was made. The experiment however was not a success, as consumers would not buy them except at a very low price. United Kingdom shipments show a profit which was due to the high prices received for the fruit that arrived in good condition.

The question of variety needs consideration, as from experiments which we carried out this year, few local varieties have a cold storage life of over 10 days. Four crates of different varieties, some wrapped, and others unwrapped, were kept in cold storage and examined every three days. On the ninth day examination showed that the flesh of three of the varieties showed dark spots when cut open. These same varieties completely broke down later. The only variety whose flesh did not discolour, and remained in good condition up to fifteen days, was what is known locally as a "bottle-neck" pear; which had a brownish green skin that was very rough, and far from attractive in appearance.

TABLE VI.

MISCELLANEOUS.

Cost of Produce.	Other Local Expenses.	Freight and Other Charges.	Total Expenses.	Gross Sales.	Loss.
£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.	£ s. d.
11 3 7	6 10 7	14 5 2½	31 19 4½	30 1 7½	1 17 9

Miscellaneous sales were mostly to Bermuda, and in a number of cases, were of an experimental nature.

The trading of the Bureau may be summarized as follows :—

Limes and mangoes show small profits, while tomatoes, avocado pears, and miscelleneous show losses. Advantage will be taken of the experience gained this season, and for the coming year only ½d., per lb., will be advanced for tomatoes, which should be safe as we now enjoy a preferential tariff in Canada. Pears will not again be shipped to Canada, and shipments to Bermuda will be limited during the peak of the season. The price paid locally at that time could also be reduced.

The Bureau has fostered a local industry, namely the making of house brooms. The broom corn from which these brooms are made, grows readily in St. Vincent, and the cost of production is low enough to undercut imported brooms. There is a steady improvement in the finish of the brooms, and there is no reason why when the makers get more skilled, outside markets– especially intercolonial ones—should not be obtained. The number of brooms sold this year was 84. There should be an increased sale in the coming year however, when the brooms become better known.

TABLE VII.

EXPENDITURE AND RECEIPTS 1932.

Expenditure.		Receipts.	
1932.		1932.	
To House rent	£ 30 0 0	By Sales from abroad	£702 10 1
„ Labour	65 5 3	„ Local sales	105 2 10
„ Amount paid for fruit	429 4 6	„ Increase of Liabilities	169 10 4½
„ Freight	120 15 7½		
„ Porterage	11 12 11		
„ Light/ge	24 12 11½		
„ Labels	28 18 9		
„ Wrapping paper	53 1 5		
„ Crates	110 10 4		
„ C/Storage charges	5 17 4		
„ Miscellaneous	39 10 9		
„ Decrease in Assets	67 13 5½		
	£987 3 3½		£987 3 3½

As freight to Canada is paid "collect", it does not appear in the above table.

TABLE VIII.

ASSETS AND LIABILITIES 1932.

Liabilities.				Assets.			
31st December 1932.				Crates	£ 71	15	5
Amount due Treasury	£598	3	3	Labels	53	18	7
,, ,, Govt. Cotton Ginnery	101	6	8	Wrapping paper	15	5	4
				Canned Fruit	2	0	6
				House brooms etc.	1	3	4
				Jelly bottles	2	0	8
				Amount due locally	1	17	9½
				Amount due abroad	46	11	6½
				Cash in hand (Petty Cash)		3	3
				Excess Liabilities	504	13	6
	£699	9	11		£699	9	11

It will be noted that certain assets—machinery, baskets, and packing shed fittings which appeared in the 1931 Report, have been written off.

SECTION V.

REPORT ON THE WORKING OF THE GOVERNMENT COTTON GINNERY FOR PERIOD 1st JANUARY TO 31st DECEMBER, 1932.

Ginning and Baling.

Seed-cotton received for ginning amounted to 399,315 lb., made up of 368,044 lb. white seed-cotton and 31,271 lb. stained. The total quantity received during the previous season was 1,308,070 lb., made up of 1,204,308 lb. white seed-cotton and 103,762 lb. stained. There was therefore a decrease of 908,755 lb. during the year under review.

The lint obtained from the white Sea Island cotton amounted to 100,360 lb. and that from the stained to 8,236 lb. making a total of 108,596 lb. The figures for the previous year were 329,830 lb. from white cotton and 27,157 lb. from stained ; giving a total of 356,987 lb. so that there was a decrease of 248,391 lb. in the totals.

Oil Expressing and Refining.

Oil was expressed from 713,045 lb. of seed, 166,326 lb. of which were received from the Kingstown Cotton Factory, 71,475 lb. from another Ginnery, and 214,160 lb. of Marie Galante seed obtained from the Union Island Ginnery. The quantity of seed from which oil was expressed during the previous year was 1,531,180 lb., so that there was a decrease of 818,135 lb.

The quantity of oil refined for the season was 5,869 gallons, and 6,567 bars of soap were manufactured from the residue of the oil refining vat.

Purchase of Cotton on the Co-operative System.

Advances of 3 cents per lb. on white and ¾ cents per lb. on stained Sea Island cotton were paid for crop 1931–32. The purchases amounted to 216,372 lb. of white, and 14,421 lb. stained ; making a total of 230,793 lb. The figures for crop 1930–31 were 567,811 lb. of white and 31,471 lb. of stained, making a total of 599,282 lb., so that the 1931–32 season showed a decrease of 368,489 lb.

The lint obtained was 59,961 lb. white and 3,964 lb. stained giving a total of 63,925 lb., which was 100,674 lb. less than the total for 1930–31.

There were 68 bales of white cotton for the 1930–31 crop, and 167 bales of white and 11 bales of stained of the 1931–32 crop remaining unsold at the close of the year. The 11 bales of stained were sold after the close of the period under review.

Purchase of Corn on the Co-operative System.

Corn purchased for the season consisted of 51,420 lb. of shelled and 6,440 lb. on the cob, which yielded 53,263 lb. of kiln-dried corn. Figures for the preceding year were 53,019 lb. of shelled corn and 7,291 lb, on the cob. There was therefore a decrease on the previous year of 1,599 lb. shelled corn and 851 lb. cob corn.

The advances paid were $1.00 per 100 lb. for shelled corn and 60 cents per 100 lb. on the cob.

Other Transactions.

53,263 lb. of corn were kiln-dried, 36,430 lb. were shelled, 33,657 lb. were ground into meal or stockfeed ; 3,618 lb. cotton seed were selected and disinfected for planting. Stained cotton seed was disintegrated for use as manure, the quantity treated being 41,009 lb. Grain etc., fumigated and stored amounted to 19,112 lb.

The summary of transactions for the last two years is as follows :—

	1930–31.	1931–32.
Seed-cotton received and ginned -	1,308,070 lb.	399,315 lb.
Cotton seed expressed -	1,531,180 „	713,045 „
„ „ disintegrated -	116,527 „	41,009 „
Seed-cotton purchased -	599,282 „	230,793 „
Corn purchased -	60,310 „	57,860 „
„ kiln-dried -	58,005 „	53,263 „
„ shelled -	15,082 „	36,430 „
„ ground in meal or stockfeed -	54,215 „	33,657 „
Cotton seed solected and disinfected for planting -	5,548 „	3,618 „
Grain etc. fumigated and stored -	31,581 „	19,112 „
Cotton seed oil refined -	10,748 gall.	5,869 gall.
Soap manufactured -	4,050 bars.	6,567 bars
Cotton seed meal delivered -	600 tons.	450 tons.